THE WILDS OF PATAGONIA

CARL SKOTTSBERG

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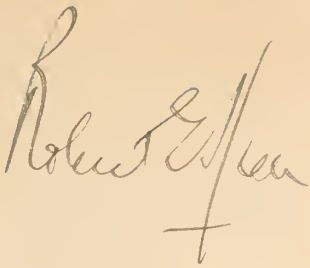

THE WILDS OF PATAGONIA

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Carl Skottsberg.

THE WILDS OF PATAGONIA

A NARRATIVE OF THE SWEDISH EXPEDITION TO PATAGONIA TIERRA DEL FUEGO AND THE FALKLAND ISLANDS IN 1907-1909

BY

CARL SKOTTSBERG, D.Sc., ETC.

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TO

SIR JOSEPH DALTON HOOKER

O.M., G.C.S.I., C.B., D.C.L., LL.D., F.R.S., ETC.

THE PIONEER AND THE MASTER

THIS VOLUME IS DEDICATED IN PROFOUND ADMIRATION

PREFACE

When, in January 1904, I had returned from taking part in the Swedish Antarctic Expedition, and had begun to work out my notes and collections, it happened to me, as it has happened to so many others before, that every now and then questions cropped up which, for want of material, had to be left unanswered. Gradually also quite new problems presented themselves, and the thought of returning once more to some of the countries I had visited soon arose. One of my companions from the *Antarctic*, Dr. J. G. Andersson, had just the same experience, but was kept in Sweden by his work as director of the Geological Survey. Without knowing of my scheme, he had got two of our common friends, T. Halle and P. Quensel, interested in our old field of operations in South America, and one day, as we happened to be speaking of it, we considered the possibility of planning a modest expedition, principally for geological and botanical purposes. With a geological survey were connected a number of geographical problems, such as the changes of the land after the Ice Age; the formation and true nature of the Patagonian Channels; the origin of the transverse Andine Valleys;

the influence of geology and plant-geography on the landscape, &c. The algological investigations would also lead to the formation of zoological collections, and besides, we thought that in the Patagonian Channels we should have opportunities of making ethnographic studies.

In order to discuss our plans I arranged with Quensel and Halle that they should meet me in Stockholm at the Geological Survey office, and one evening was born the enterprise, afterwards called the "Swedish Magellanic Expedition," of which the author consented to undertake the leadership, the members being: Carl Skottsberg, born 1880, D.Sc., Lecturer at the University of Upsala; Percy D. Quensel, born 1881, B.Sc. (now Dr.), Upsala; and Thore G. Halle, born 1884, B.Sc. (now Dr.), Stockholm.

I devoted myself to botanical work, but also made most of the insignificant zoological collections. The speciality of Mr. Halle was the survey of fossiliferous deposits, and as a clever bryologist, he assisted me in gathering mosses and other cryptogams. Mr. Quensel was mainly occupied with studies of the eruptive rocks, the origin of the Andes and the phenomena of glaciation. On many occasions the two geologists collaborated.

But it is one thing to make up one's mind to go to South America, another to get money for such a purpose. The expedition cost about 23,000 Swedish crowns

(£1280), and thanks to several funds, scientific societies and private persons, we procured the necessary money without great difficulty. Many useful articles in our equipment were presented to us, and the Swedish Johnson Line in Stockholm gave us a free passage on its steamers to and from Buenos Aires. To all those who assisted us, I have tried to express our gratitude in the preface to the Swedish edition of this book, and have explained how it would have been absolutely impossible to make a journey which lasted nearly two years at such small expense, had it not been for the unparalleled generosity shown by Argentina and more especially by Chile—not that the Argentine Government was less interested, but we spent most of the time in Chile. I need not repeat this, nor my sincere thanks to the representatives of Sweden. There is, however, one thing that I want specially to mention on the occasion of my book being laid before English readers. We spent part of the time in a British colony, the Falkland Islands, where His Excellency the Governor, Mr. W. L. Allardyce, C.M.G., and Mrs. Allardyce, both deeply interested in scientific work in general as also in our personal welfare, did all they could to promote our success. We are also greatly indebted to the Falkland Islands Company Ltd., to its director in London, Mr. F. E. Cobb, as well as to its representatives in Port Stanley, Mr. W. Harding, Mr. W. C. Girling and Lieutenant Colonel A. Reid, D.S.O. (no longer in the

Company's service). We also owe very much to numerous sheep-farmers, Mr. Allen of Darwin, Messrs. Benney of Saunders Island, Mr. Bertrand of Roy Cove, Dr. Bolus (now in Punta Arenas, then in Fox Bay), Mr. Felton of Westpoint Island, Dr. Foley, of Darwin, Mr. Mathews of Port Howard, Mr. Miller of Hill Cove, Mr. Packe of Port Louis, and many others, too numerous to mention. In Chile as well as in Argentina we met and were assisted by a great number of English people; we made good friends wherever we came, and learnt to admire the English nation as the great civilising power of the world.

It may not be considered unnecessary to mention, that during the whole journey under most trying conditions, I and my comrades remained the same good friends as we had been on leaving Sweden. Nothing is so well calculated to try friendship as a wild life away from culture and from other people. In this case friendship certainly stood the test.

C. S.

Upsala, 1911

CONTENTS

PREFACE Page vii

CHAPTER I

THE COASTS OF THE FALKLAND ISLANDS

We leave Sweden : Visits to Buenos Aires and Montevideo ; Arrive at the Falkland Islands : Position ; Port Stanley and its Social Life ; Communications ; The Landscape round the Town ; Cape Pembroke Lighthouse and the Forest in the Sea ; To the West Falklands ; Wild Cattle ; The Falkland Fox ; Adventure on Fox Island ; Life on Remote Islands ; Roy Cove and the Tale of a Ship's Adventure ; Westpoint Island ; Tussock-grass ; Bird Life ; The Dead Forest Pp. 1–18

CHAPTER II

RIDING THROUGH THE FALKLANDS

Hill Cove, a Fine Settlement ; Shepherds and their Life ; Ascent of Mount Adam ; A Nocturnal Excursion ; Saunders Island and a Page of History ; Valley of the Warrah River ; A Dangerous Passage ; Port Howard ; Across Country to Fox Bay ; A miserable Christmas ; Notes on Geology ; Lafonia and Port Darwin ; A Ride to San Carlos ; Return Overland to Port Stanley ; Port Louis and its History ; Departure Pp. 19–31

CHAPTER III

IN TIERRA DEL FUEGO

Punta Arenas ; Babylonian Confusion ; Preparations ; Dawson Island and the Salesian Mission Station ; On the Shore of Lake Fagnano ; Hardships in the Azopardo Valley ; The First Guanaco ; We Pitch the Tents at Fagnano ; Pagels ; The Betbeder Pass and Discoveries South of it ; A

chilly awakening : Halle's Excursion to Lake Deseado : Boat Trip on Lake Fagnano : We Raise our Camp : A Difficult Embarking : Back in Punta Arenas Pp. 32–61

CHAPTER IV

OTWAY WATER AND SKYRING WATER

Cape Froward : Jerome Channel : Patagonian Gold Fever : Along the Shores of Otway : Notes on Vegetation : Fitzroy Channel : Storm : A Solitary Hut : Traces of Indians : Excelsior and Glacier Sounds : Gajardo Channel and a Perilous Boat Excursion : *Huemul* Aground : The Water of Skyring : Fossiliferous Beds : Another Tale of a Mine : A Nocturnal Adventure : Saved Pp. 62–74

CHAPTER V

THE PATAGONIAN CHANNELS

Preparations : Captain Bordes : Our Indian Interpreter : The Magellan Skärgård : On the Evangelistas Rocks : Unknown Waters : The Patagonian Channels and their Nature : We meet the first Indians : Two Tracks : The Penas Gulf : Baker Inlet : In the unknown Interior of Peel Inlet : Back through Smyth Channel Pp. 75–90

CHAPTER VI

A DYING RACE

Our first Encounter with Aborigines : Appearance : Visit to an Indian Camp : The Indian Wigwam : Food : Hunting and Weapons : Social Customs : Treatment of the Women : Character : Nomadic Life : Canoes : Travelling : Remarkable Portages : Language : Extermination : Views of the Future Pp. 91–103

CHAPTER VII

CHILOÉ AND THE GULF OF CORCOVADO

Chiloé, Historical Retrospect : Ancud, the Capital : Schools : Power of the Roman Catholic Church : The Chilotes and their Life : A Ride to the Pacific Coast : Pudeto River : Primeval Forest of Chiloé : Castro : Adventurous Voyage to Huafo Island : Forest Scenery : Wild Days :

To the Island of San Pedro in the Footsteps of Darwin : Quellon : Corcovado, "el famoso" : The Yelcho Valley Pp. 104–124

CHAPTER VIII

IN THE HEART OF CHILE

To the Centre of Chile : Corral and Valdivia : Halle's Surveys in the Coal-mines of Arauco : Lota : Valparaiso : Santiago and its Swedish Colony : Los Andes : The Uspallata Pass and the Transandine Railway : Aconcagua : Baño del Inca : A Strange Descent : The Great National Festival of Chile : To Port Montt

Pp. 125–133

CHAPTER IX

ROBINSON CRUSOE'S ISLAND

The Islands of Juan Fernandez : Discovery and Position : First Impression : Robinson's "Look-out" : Wonderful Plant World : The Chonta Palm : Marvellous Ferns : Extermination of a Unique Vegetation : The Memorial Tablet of Alexander Selkirk, the real Robinson : The History of the Sandal Tree : The last Sandal Tree : Robinson's Grotto : Bahia del Padre : Masafuera Island : Topography : Remarkable Plain : Wild Goats : Marvellous Valleys : Our Scientific Results : The Future of the Islands Pp. 134–148

CHAPTER X

ACROSS THE ANDES INTO ARGENTINA

Plans for the Return South : Notes on the Discoveries in Patagonia : The Boundary Dispute between Chile and Argentina : We leave Port Montt : Osorno and Calbuco Volcanoes : Lake Todos los Santos : On the Glaciers of Mount Tronador : Across the Pass : Snowstorm : Bariloche : Preparations for a Long Journey : Our Caravan and Equipment : On Horseback Pp. 149–166

CHAPTER XI

THROUGH NORTHERN PATAGONIA

First Impression of the Pampas : Our First Camping-place : Norquinco : Half the Caravan Disappears ! : Inquiries : Across the River Chubut : Life on the Lelej Farm : A Hearty Welcome : Ostriches and Guanacos :

Through the Nahuelpan Pass : 16th October Valley : Notes on Vegetation : Along the Futaleufú River to the Chilean Boundary : South Again : In the Valley of the River Carrenleufú : Another Bankrupt Company and a Swedish Colonist Pp. 167–186

CHAPTER XII

THROUGH THE CORDILLERAS TO THE PACIFIC COAST

Salt Lagoons and Abundant Bird-life : The First "Meseta" : The Cisnes Valley : Excursion to the Forest Region : Tuco-tuco and Patagonian Deer : Senguerr River : No Water : Back in Chile : Lamb-marking : The Coyaike Valley : The Aysen Company : To the Pacific Coast : Luxuriant Rain-forest : Return to Aysen Pp. 187–197

CHAPTER XIII

LAKE BUENOS AIRES

The Swamp of Rio Mayo : Meseta Chalia, an Adventurous Passage : Floating Soil and Tuco-tucos : A Dangerous Descent : The Puma : Valle Koslowsky : A Singular Telegraph Office : The Landscape round Lake Buenos Aires : In the Fenix Valley : Interesting Vegetation : Hunting Young Guanacos : Patagonian Fur-trade : Armadillos : Ruckel's Peril : Difficulties in the Jeinemeni Valley : Ascent of the Mountain ridge at Zeballos River Pp. 198–220

CHAPTER XIV

LAGO BELGRANO

The Zeballos Pass : Natural Features at Lake Pueyrredon : Troublesome Ascent : In the Tarde Valley : Across to Belgrano River : Unexpected Encounter with German Colonists : Our Sin against the Eighth Commandment : Christmas : We Start on the Lake : Contrary Winds : On the Lake Azara : Glorious Mountain Scenery : A Happy New Year ! We strike Camp Pp. 221–238

CHAPTER XV

LAKE SAN MARTÍN

Across the High Pampas : Crossing the Rivers Belgrano and Lista : The Troublesome Tuco-tuco Rivulet : Through the Forest to Carbon

River : The Fósiles Pass, our Worst Day : Lake San Martín : Start with a Berthon Boat : Head Wind : In the Northern Arm : The Schoenmeyr Glacier : Imminent Peril : " Galley-slavery " : Farewell to San Martin Pp. 239–257

CHAPTER XVI

ACROSS THE SIERRA DE LOS BAQUALES

The Swamps round Laguna Tar : An Unexpected Encounter : Pavo and the Skunk : On the shores of Lake Viedma : Leona River and a Dead Landscape : With Carlos Fuhr : The Ferry-boat on Santa Cruz River : Visit to Cattle's Farm : A Lady Gaucho : The Baguales Range : Back to Civilisation ! : Notes on the History of South Patagonia Pp. 258–271

CHAPTER XVII

LAGO ARGENTINO

Quensel's Boat Journey in 1908 : The Start and Equipment : Squally Weather : Bismarck Glacier, a Splendid Sight : Large Icebergs : With a Canvas Boat in the Ice : To the North Arm : Hell Gate : A Dangerous Landing : A Narrow Escape : Upsala Glacier : Another Clean Shave : Back again with Rich Results Pp. 272–277

CHAPTER XVIII

OUR JOURNEY TO PUNTA ARENAS

Estancia Payne : Importunate Foxes : Cerro Payne, Patagonia's most Beautiful Mountain : Quensel's Excursion in 1907 : Cerro Donoso : A Bad Day and a Worse Night : Tame Deer : In the Payne Mountains : The White Stag : A Picnic Party : My Excursion to the Inland Ice : A Heavy March : Ultima Esperanza : The Eberhard Family : The Maylodon Cave : A Night's Ride : We part with our Horses : Arrival at Punta Arenas Pp. 278–295

CHAPTER XIX

THE BEAGLE CHANNEL

Back in the Channels : The Brecknock Pass : Wonderful Glaciers : Lapataia and Lake Acigami : The Mission in Douglas Bay : The Last Yahgans : Notes on Geology : Ushuaia : Bridges' Farm : Slogget Bay and Gold-

digging in Tierra del Fuego : Another Boundary Dispute : Return to Punta Arenas and to Buenos Aires Pp. 296–313

CHAPTER XX

A WINTER TRIP TO SOUTH GEORGIA

We leave on Board the *Cachalote* : Severe Damage of Engines : Adrift on the High Seas : Exciting Situation : The Engines Repaired : Bad Night on the Coast : At Anchor again : Nature and Position of South Georgia : Climate : Flora and Fauna : Winter's Unexpected Arrival : Along the Coast : Stormy Days : Whaling : A Singular 1st of May : With Escort to Buenos Aires : Return to Sweden Pp. 314–329

INDEX P. 330

LIST OF ILLUSTRATIONS

	To face page
Carl Skottsberg	*Frontispiece*
Percy D. Quensel	4
Thore G. Halle	4
Typical Landscape in East Falkland with quartzite ridge	10
Mollymawk Rookery, West Point Island	16
Penguin Rookery (Eudyptes), West Point Island	16
The Great Stone-run South of Port Louis, East Falkland	28
The Roads of Punta Arenas, South-wester blowing	32
Punta Arenas from the hills	32
Back from the Betbeder Pass	38
Indians at the Dawson Mission Station	38
The Betbeder Valley	52
Mount Svea, with glacier and moraines	52
The Bottom of Ventisqueros Sound	68
The Entrance of Excelsior Sound	72
Our Interpreter, Channels of Patagonia	78
Two Channel Indians	78
Peel Inlet, with great glaciers	90
Indian Camp, Sarmiento Channel	94
Chilote House	106
The Plaza in Ancud, Chiloé	106
The Famous Corcovado	116
Valdivia	126
Harbour at Valparaiso	126

	To face page
Robinson's "Lookout," with commemorative tablet	140
View from top of Masafuera showing canyons	144
Robinson's Grotto	144
Puerto Montt	158
Ready to start	158
Small Patagonian Sheep Farm	176
Patagonian Rain-forest	194
Fenix River	214
Valley of Antiguos River looking South	214
The Belgrano Pass, with giant basalt pillars	226
West Arm of Lake Belgrano	226
German Colonists, Lake Belgrano	234
Breakfast Table on Christmas Day, Lake Belgrano	234
View of Pampas, near Lake Argentino	262
Dead Landscape, East of Leona River	262
The Bismarck Glacier, Lake Argentino	274
The Upsala Glacier, Lake Argentino (the biggest in Patagonia)	274
Icebergs and Canvas Boat, Lake Argentino	274
Last Hope Inlet	288
The "Neomylodon" Cave, Last Hope Inlet	292
The Beagle Channel, looking West	296
Ushuaia and Martial Mountains	304
Glacier in N.W. Arm of Beagle Channel	310
Panorama South-west side of Lake Acigami	312
"The Winter's Bark," Tierra del Fuego	312
The Norwegian Factory, South Georgia	316
A Meeting in South Georgia	316

	To face page
Humpback Whale, upside down, South Georgia	324
Three Right Whales, South Georgia	324

MAPS

Map of South America	*At end*
The Falkland Islands	*Facing page* 6
Otway and Skyring Waters	„ „ 62

CHAPTER I

THE COASTS OF THE FALKLAND ISLANDS

THE Swedish steamer *Princess Ingeborg* left Gothenburg on September 10, 1907. Wind and sea favoured us, and, after a most agreeable passage, which came like a strengthening, refreshing rest after all the work of the preceding months, we arrived in Buenos Aires on October 7. The Swedish Minister, Mr. O. Gyldén, gave us a hearty welcome, and informed us that the Argentine Republic had generously granted us the help we had applied for. We had ample time to get a glimpse of the surrounding country, but naturally preferred to confine our attention chiefly to the scientific centres, to La Plata, Buenos Aires, and Cordoba, where people always showed themselves interested in our enterprise and helped us to make a good start.

In Montevideo the Swedish Consul, Mr. Rogberg, met us, and after a short stay, which we thoroughly enjoyed, we began our voyage on the P.S.N.C. liner *Oravia*.

The big steamer made its way over a calm and friendly sea that lay glittering in the bright sunshine. For a couple of days we carried the spring of favoured Uruguay with us, but on the very morning when we expected to get our first glimpse of the Falklands a chill fog slowly descended over the waters, and anxious passengers

tried in vain to get a sight of land. All at once, close by, the brown and yellow, storm-beaten coast loomed up out of the heavy mist, and through furious squalls and a deluge of rain the *Oravia* steered between the Narrows and anchored in the spacious, natural harbour of Stanley.

The first person to greet us was one of the staff of the Falkland Islands Company, Lieut.-Colonel Alexander Reid, D.S.O., who had served with the C.I.V.s during the last South African War. We shall always remember him as one of the best friends our expedition met on its long journey. Presently the acting Swedish Consul, Mr. Girling, arrived on board, and soon afterwards we found ourselves comfortably seated at afternoon tea in our new quarters. Once more the smoke from the Falkland peat-fire filled my nostrils, recalling to memory my old acquaintance with this peculiar land and its inhabitants—an acquaintance that I was now to revive and to increase. We said good-bye to Mr. Quensel for some time, as he was going straight on to Punta Arenas, in order to make an expedition into the interior of South Patagonia.

The Falkland group extends from S. Lat. 51° to 52° 30′ and from Long. 57° 40′ to 61° 25′ W., and consists of two large and a very great number of small islands, which form a regular barrier against the ocean waves. The coast-line is exceedingly broken; long, narrow, and winding creeks penetrate far into the country, marking the course, as there are many proofs to show, of old valleys now submerged under the level of the sea.

On the east coast of East Falkland is situated the

little town of Port Stanley, with about 1000 inhabitants. Along the south shore of the harbour and on the slope of a low ridge, which shuts out the view of the ocean towards the south, long rows of houses are erected, for the most part small cottages built of wood. They leave a very homely impression, as their occupants have tried to transform their porches into small conservatories, where the eye rests on bright colours—which the soil itself absolutely refuses to reproduce.

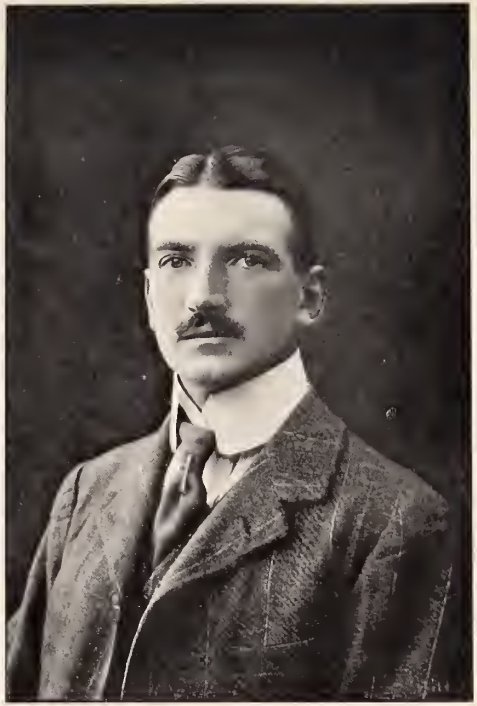
Some buildings attracted our attention more than the rest. In the far " West End " there is a conglomeration of houses, together constituting the Government House, the residence of his Excellency the Governor. Mr. W. L. Allardyce, C.M.G., now holds this position. He is a man warmly interested in the material as well as the spiritual welfare of his colony, and we fully recognized his appreciation of our scientific work, which he tried to promote as far as lay in his power. He rules a vast dominion. Some years ago Great Britain painted red another large section of the globe, the colony now including, besides the Falklands and South Georgia, the South Sandwich Islands, South Orkneys, South Shetlands, and Graham's Land. The result of this spread of British power was far-reaching. The whaling industry having languished in Norway, energetic whalers started in the South Atlantic and Antarctic Seas, and numerous vessels hunt there every summer and pay their tribute to the Falkland Government, which has thus increased its revenue.

At the other end of the town lies a long white building, representing the second power here—not *the people*,

but the F.I.C.—the Falkland Islands Company—a mighty institution. Only with the assistance of its chief on the spot, Mr. W. Harding, were we able to carry out our investigations in the most interesting part of East Falkland, or to visit the western islands, where the company's small schooners are the sole available means of communication.

The third State power, the press, is closely connected with the Church, as the name of the only paper, *The Falkland Islands Magazine and Church Paper*, issued once a month, bears incontestable witness. Close to the beach rises the cathedral; a proud title which is borne as a matter of fact by a little stone chapel. The city of Stanley is the headquarters of a bishop, but as his diocese includes almost the whole of South America the islanders do not enjoy his presence for more than a fortnight in the year. Naturally, the inhabitants are too numerous to be of one faith. Both Roman Catholics and Baptists have their own churches, but the relations between the different sects seem to be most amicable, at least if one dare judge from a certain little scene that has remained in my memory. A welcome was arranged for the bishop, and on that occasion the faithful gave free scope to their talents, and a Roman Catholic, whose intentions were excellent if his voice was poor, appeared on the stage and sang a little song in honour of his lordship.

It is remarkable and almost touching to observe with what faithfulness the 2300 Falklanders cling to the habits of the old country, from the parlour with its polished stove, the china cats on the mantelpiece,



Atelier Dahlgren, Upsala.

PERCY D. QUENSEL.

Wiklund, Stockholm, phot

THORE G. HALLE.

the breakfast of eggs and bacon, to the bedrooms without a fire. When you have drawn the curtains and lit the lamp you can believe that you are in a snug little house in a small English town. But take a look out of doors, and you generally meet a howling west wind, a cold rain beats on your face, and whichever way you turn you always see the same dreary, desolate landscape. You must certainly be born in Northern Europe, or you would lose heart in this forlorn corner of the world.

The centre of Stanley society is Government House, and picnics, dances, and dinners follow hard upon each other. I can assure you that there is plenty to amuse you in Stanley—that is, if you have the privilege of being admitted to the "upper ten" (without a thousand!).

Life is much less easy for those who have been stranded on this inhospitable coast, not of their own free will, but by a cruel fate. Generally they seek refuge in one of the six small "hotels," where statistics show the consumption of whisky to be considerable. Nevertheless, the police can go to bed early in Port Stanley, where the peace is seldom broken.

Communication with England is kept up by the P.S.N.C. steamers, which touch once a month on their outward and once on their homeward passage from the west coast of Chile and Punta Arenas. Their visits put new life into the little town; boxes and parcels bring dainties and the latest fashions; the post-office is besieged; strangers come ashore to have a look round and to buy illustrated post-cards. But the huge black hull soon disappears, and the town sinks back into

its usual quiet. Now and again a sailing-vessel happens to come inside the harbour—generally it is some damaged craft, which then often loses its freedom. To repair it is too expensive, and so the F.I.C. buys the whole thing, and the port makes an addition to its fine collection of old hulks.

* * * * *

It is a day in early spring on the hills near Port Stanley. The heath stretches yellow and dreary, the withered grass is beaten to the ground by an irritating wind, from which you can find hardly any shelter. Grey and broken quartzite ridges run through brown peat-bogs. Nowhere is there a tree visible, scarcely a bush is to be seen; the islands are absolutely destitute of timber, and the inhabitants use dried peat for fuel. Here and there a little white flower has ventured to peep out of the dead grass and stands shivering in the cold. Let us climb one of the low peaks that rise a little above the surroundings, and get a more extensive but not a finer view. Everywhere we see the same sad picture; low ridges, undulating plains, winding brooks, where boggy ground gleams with its dangerous bright green colour as if to warn the horseman. Here and there glitters some little shallow pond. A frightened flock of sheep hurries off, screaming seagulls hasten past, slowly the turkey-buzzard soars away. . . .

Such is often the impression you get on a short visit to the Falklands, especially during the unfavourable season, and even a bright sunny day can hardly give this scenery real charm. Grand it could never be without the assistance of the sea, for here as in so many other

Expeditions on land
" by sea

places in the world the roaring surf bestows a wild beauty upon the black, inhospitable cliffs.

We spent the first few days making excursions in the neighbourhood of the town, and Mr. Halle went as far as Port Louis. Later on I shall say more about that place. Before we leave this part of the island, however, let me conduct the reader to a point not far from the city, the lighthouse near Cape Pembroke, a spot that has always possessed a strong attraction for me since the first time I visited it. One can get there overland or by boat—let us choose the latter way this time! The landing is interesting enough; the shore is rocky, and we steer through foaming breakers towards a narrow gap. Every eye is watchful, every hand ready. Across the opening a heavy chain is stretched, and when the boat passes underneath a line is flung round it, the end being secured round the middle bench of the boat; at the same moment another line is thrown ashore, where a man stands ready to receive it. It is indeed required; the surf rolling in hurls the boat forward with creaking timbers and then draws it back again, so that the ropes are strained like the strings of a violin. If you miss the chain your boat may be crushed against the cliffs. This, indeed, *has* happened, but I am glad to say that I managed to get ashore without adventure, and at once went to see that good fellow, the light-house-keeper, who was glad enough to get some company in his loneliness. In truth, one would have to seek far to find a more desolate place than this. After the destruction of the tussock-grass the whole promontory was changed into a vast field of drifting sand. Desolation

whispers in the whistling sand that beats on the windows; desolation howls in the gale round the black, jagged rocks; desolation thunders in the everlasting breakers. But one gets a certain feeling of security when within; the light carries on its silent struggle with danger and darkness and the sand rattles incessantly against the iron walls. The magnificent lamp is of the "Lux" pattern, and a good old "Primus" is used to heat the burner. The vigorous keeper, my friend Mr. Pearce, nurses his light as if it were a baby; every part of its mechanism is perfectly clean and shining, and he tells you with barely concealed pride that the electric flash from the mail-steamer is but poor stuff in comparison with his own light. He listens to every word when you tell him of foreign countries, and he himself has rather specialized on the Antarctic regions, ever since the time when the leader of the Scottish National Antarctic Expedition, Mr. Bruce, was his guest.

When the sun rose I found plenty to do. At low tide there is a precious world spread out on the dry rocks or in half-emptied pools. The rocks are covered with seaweeds, green and reddish brown, of all shades and colours; half dead from thirst, they await the arrival of another tide which shall restore them to life. In the small ponds or basins a variegated company dwells. A carpet of rose-coloured calcareous algæ covers the rock, and here and there are patches of other seaweeds, from the largest blade-like variety to the small, elegant bushes, displaying the brightest scarlet or crimson, purple or violet colouring. And

what a life there is in these recesses! The most splendid *actiniæ*—sea-anemones, as they are often called—stretch their hundreds of arms; an innumerable horde of little crustaceæ dance round and round, wild with delight; beautiful shells rest lazily in safe nooks and crannies, while here and there little fishes that have got left behind when the water receded dart to and fro in their anxiety to escape their temporary prison.

Deeper down the gigantic *Durvilleas* roll their bodies in the foam—they are some feet broad and many feet long, and fastened on the bare rock by means of a short thick stalk, and a disc just like a horse's hoof. Some of them farther out in the heaviest surf are of another shape: they are divided into long, cylindrical segments, which writhe like serpents in eternal struggle with the full force of the sea. Below lies the forest of the ocean. It is formed of another brown kelp, the arboreous *Lessonia*, with trunks many feet long and as thick as a man's thigh, carrying a crown of large yellowish-brown leaves, just peeping above the water, and slowly swinging forwards and backwards in the waves. It is a magnificent sight, this submerged forest, with its rich bower, where fishes and all sorts of marine animals swim, while a whole world of plants and creatures thrive in its shadows. A pair of ducks glide along chattering and quacking, followed by five dear little ducklings, who make their voyage of discovery to the promised land under their parents' wise direction. Clear as crystal is the water, and the temptation to have a bathe is very strong indeed. How one would enjoy climbing in those curious trees! No fear that the branches may give

way, for they are made to carry a greater weight than ours. What a pity that the water is so cold—but a few degrees above freezing-point!

Finally, let us gaze round farther away over the water. There is a yellow or brownish band, that extends along the shores as far as we can see. It is one of the most famous plants in the world, *Macrocystis*, Nature's own beacon. One might say that as a rule there is no dangerous reef where that giant seaweed does not grow to warn the sailor. And how beautiful it is, with its graceful branches softly moving to and fro with the swell of the ocean!

We landed in Port Stanley on October 26, and it was long before we found a schooner bound for an extended trip. But finally, on November 18, the *Lafonia* hoisted the Swedish as well as the English colours and steered out to the open, to work her way westward round the north coast.

The outlines of the country are monotonous; only here and there a round hill rises above the neighbouring plains, always making a good landmark.

The land has disappeared; we are outside the Falkland Sound which separates the two large islands, and by-and-by we get sight of the three hummocks on Pebble Island. We steer clear of the thousands of dangerous reefs, and continue westward with a fresh N.N.W. and a heavy sea that washes our little craft from bow to stern. The good wind keeps fresh, and we pass the straits at Carcass Island, cross Byron Sound, and have the good luck to reach Westpoint Passage with the rising tide, which allows us to get through this difficult

Typical Landscape in East Falkland, with quartzite ridge.

channel. The tidal currents on the Falkland coast are perhaps the greatest danger to sailing-vessels. They swirl through those innumerable narrow channels which one is bound to get through, with the strength of up to six or seven knots. A look on a chart is sufficient to persuade us that we are navigating a very disagreeable coast. Hardly a year passes without one or more of the small Stanley schooners leaving the town, never to return.

The scenery has changed a little. It is desolate as before, but grander. The cliffs run down to the sea sheer as though cut by a knife, while heavy breakers throw their foam high above them. On the inside of the steep Rabbit Island, in King George's Bay, the *Lafonia* anchored, but the next morning we continued our journey across the gulf, through the critical East passage, and then through a long and winding sound to the entrance of Port Philomel. Here we encountered a gale lasting four and a half days. With the prevailing south-west wind it was out of the question to get away. We were anchored only a few hundred yards off the land, but the wind was so strong that it was with difficulty we managed to get ashore. We wanted to march across the peninsula, in order to get acquainted with one of the more inaccessible parts of the island. It is a heavy job to march in the Falkland camp, up and down all the time, through ravines, stone-runs, or swamps. Our fame as "foot-Indians" is not small in Port Stanley, and we begin to understand why the people regard a long walk in the camp as something rather eccentric.

We had just climbed a steep ridge when I thought I smelt something familiar, and stopped to trace it. No doubt it must be cattle, which seemed peculiar so far away from any settlement. But the smell got stronger, and from the top of the ridge we caught sight of the cause—some of the scanty remnants of the wild cattle, a small herd of twenty, amongst them some calves and two bulls. They at once caught sight of us, cows and calves fell back, and the bulls stopped in front of them, ready for action. But we did not want to come any closer, and thought it better to stop where we were and watch them. They were two imposing beasts, very wild-looking, with enormous horns, long coarse hair, and a tail with a tuft of respectable dimensions. Some minutes passed; they slowly retired, but turned round at every second step in order to send us a friendly look. We picked our way cautiously, for we did not wish to run across them unawares, in which case they would have charged us immediately. And as we were on foot and without any other arms than a knife to dig up plants with, we were not exactly prepared to enter on a struggle.

When the colonists in the middle of the last century came to the islands these were well stocked with wild cattle, and we were told the most exciting tales of hunting them with lasso and knife, but without firearms. "That was grand sport," said an old gentleman-pioneer. I do not doubt this, but horse and rider lost their lives in more than one encounter.

Finally the wind changed, and the question of how to get out through the narrow passage arose. The current

here, which makes about seven knots, played with the ship for a while, but eventually we came safely through it, and anchored again on the north side of Fox Island. Here, however, no foxes live, the name being all that is left of the Falkland fox. He was too tame; that was his worst fault. An old farmer on the settlement in front of the island told me that he killed his last fox in 1873, and shortly afterwards the animal was extinct. This is a pity, as the species *Canis falklandicus* has now disappeared for ever.

The glass had fallen for a second time, but our anxiety to visit Fox Island was so great that not even the threatening Falkland weather could keep us back. My intention was to look at and photograph the largest land plant of all Falkland, the *Veronica elliptica*, or Falkland box, which seems to reach its greatest dimensions just here. I had just exposed a couple of plates when the first squall came with a deluge of rain. We tried to get on board while there was time, and made full speed for the landing-place; at 1 P.M. we were back there. But it was too late. A fresh gale was blowing in the harbour: far out the *Lafonia* lay, rocking on her cables. I shall never forget the six hours we spent on shore without shelter. At seven o'clock the wind fell a little, enough to let the crew lower the lifeboat and come to fetch us. Captain Osborne himself held the tiller, and though six oars worked with the full strength of muscular arms they nearly failed to reach us.

We did not regret that place very much when we weighed anchor to visit the outlying islands, Weddell, Beaver, and New Islands, each of which is a small

sheep-farm. I can hardly imagine people more shut out of the world than their inhabitants. Years pass without their seeing any strangers save the crew of the little schooner that comes once or twice a year to bring provisions and carry away the wool. Here one has to economise; for if one runs short of an article one remains so, though there is always a spare supply of important things. We met several full-grown persons who were born there and had never left the place, and who thought Port Stanley something marvellous. This explains the queer behaviour of a young lady of eighteen who ran away and hid herself when we came, thus providing us with an altogether new experience.

No scientists had visited the outlying islands, and people had told us many remarkable things about the geology as well as the botany of the place. But though these are typical of all parts of the West Falklands, it was nevertheless worth something to be able to reduce such rumours to their proper proportions.

It will be easily understood that it must be very difficult even on the greater and richer settlements to reproduce the features of a snug and sheltered home, where the natural conditions are so unpromising as on the Falklands. When we steered into the narrow creek on the north side of King George's Bay, called Roy Cove, we were quite astonished to find that place well worthy of being called habitable. The hills are rather picturesque, and the comfortable little houses, embedded in gorse-hedges now in full bloom, left a very favourable impression. In the creek we made a discovery that caused us all to stare with amazement. Here lay a

large iron vessel, and we could not possibly imagine what business it could have in such a remote corner. But the enigma was soon solved: the French barque *Duc d'Aumale* had sprung a leak on the high seas, on her way to the west coast of America, and though in another couple of hours she would have gone down to a certainty, at the very last moment her captain managed to bring her into Roy Cove with the aid of a chart. The ocean here has many tales to tell: almost every point or reef is connected with some shipwreck; innumerable are the ships that destruction has overtaken on this coast, where no beacon or light announces danger.

We had got much information about West Point Island, and had resolved to make a fairly long stay there if possible. When we anchored at the settlement on the island, "Clifton Station," on December 7, there was no need for the owner's (Mr. Arthur Felton) persuasions; we were only too glad to abandon the *Lafonia*, which continued her voyage, and to settle on shore. Mr. Felton approximates very nearly to my ideal of a man. Ready to enjoy life and civilization when there is a chance, he nevertheless lives in complete harmony with the wild camp life; interested in his work, he tries all sorts of grasses for his sheep, but is also—an exception to the general rule—intensely fond of nature itself and gifted with such a remarkable capacity for observation that many a naturalist by profession has reason to envy him. He knows every beast or plant on his island, he loves and nurses them, quite convinced that the human race can live at its ease

without depriving living things which do him no harm of any chance of existence. I have never met anybody but him who tries to save one of the Falklands' finest adornments, the giant tussock-grass (*Poa flabellata*), which is nearly extinct wherever there are sheep, much to the detriment of the coast's appearance.

Mr. Felton expressed the deepest interest in our work, and spared neither trouble nor time to prove it; he took the greatest care that we should get the best possible results from our visit to his kingdom, which we left after a week, not without considerable regret, joining unanimously in the praise that has been showered upon West Point Island. An excursion across the island to the cliff with its steep rocks and crevices is well worth making. Large grass-bogs cover the slopes, where mollymawks (*Diomedea chlororhyncha*) have their rookery. There are eggs in the nests, one of which is more than sufficient as a breakfast dish. To obtain these one must lift the hen away by force; quick as lightning she turns her head, opens her long beak, and shuts it with a click, and finally tries to turn her crop inside out and sprinkle the half-digested, stinking food on the intruders. On the slope above the albatross's dominion is a penguin rookery, where the visitor may like to stop and look at those, perhaps the most comical of all, animals chattering and screaming among the pink-coloured guano. They belong to the "rock-hoppers" (*Eudyptes chrysocome*), and are dark blue and white, with a number of yellow feathers on the side of the head. The penguins depend completely on the water, and those of West Point have a hard

Mollymawk Rookery, West Point Island.

Penguin Rookery (Eudyptes) West Point Island.

climb of over a hundred yards to the surf, where they tumble about in a most neck-breaking fashion. Thousands and thousands of small penguin feet have dug deep marks in the hard rocks, climbing up and down, century after century. Quite struck with the uncommon sight, we sat still to watch them, as they emerged out of the breakers, jumped ashore, and started their fatiguing climb up the cliff, carefully putting their little claws where their ancestors through innumerable ages have put theirs, the road being so narrow and difficult that the penguins willy-nilly must follow in each other's footsteps.

As I have already mentioned, the Falklands have no indigenous arboreous vegetation. This was not always so. I am not alluding to distant geological periods with a plant-world quite different from that of our era, for even in the epoch in which we live there were forests in the Falklands. With the deterioration of the climate that gave rise to the ice-age large tracts of austral South America became covered with a mighty ice-cap; hundreds of plants and animals died out or migrated to the north. This did not take place on the Falklands. They experienced the hard time in another manner, and there is no trace of a glaciation. The weather became more chilly and wet, and the ground was so saturated with moisture that it began to slide away downhill, carrying with it blocks of all sizes and shapes. The forest disappeared, and certainly a number of animals and plants. When the conditions grew better the moving soil came to a standstill, the finer material, sand and clay, was washed away into the sea, but heaps of blocks

are left in evidence of past times. These are the famous stone-runs or stone-rivers, that will always rouse the interest of the stranger as well as the islander. Everywhere these peculiar formations are met with, forming a network on the slopes of the valleys or long grey streams of stones at the bottom. They constitute an obstacle to traffic quite as insurmountable as the swamps.

We had no idea before our arrival at West Point that there had been forests on the islands during a period, geologically speaking, so near our own. The rumour of heavy logs found in the ground had helped to bring us there, though we had been disposed to attribute the find to common driftwood. There was no doubt, however, that this was the remains of an old forest of needle-trees, well covered by the old sliding soil, and we had been lucky enough to make a discovery of the greatest interest. Long afterwards "the kelper" spoke of nothing but the old forest—the consciousness of the simple fact that there had grown big trees on his island seemed to strengthen his pride.

Our time was up. The signal-fire flared, and on "the main" a man with horses expected us. We were to experience a new phase of Falkland life—life on horseback.

CHAPTER II

RIDING THROUGH THE FALKLANDS

On horseback we slowly advanced along the rough, stony northern slope of the long peninsula. Several hours passed. We came close to the house of our guide, an old, taciturn Scotsman, and stopped for a while at his invitation. At once his talkative wife, attired in her best Sunday clothes, served us with whatever the Falklands can produce of delicious dishes, and we were then ready for a fresh start. What would this country be like without horses? All people ride, and ride well; it is the only way of travelling in the camp, where roads are unknown. At first we found it marvellous with what agility the horses trotted along, climbing the steepest slopes, and struggling down places that appeared perilous enough to the inexperienced rider. Sometimes there is danger, but soon one does not think of it, for in ninety-nine cases out of a hundred the horse is equal to the occasion. Hour after hour one rides in the comfortable wooden saddle without getting tired, thanks to the soft sheepskin. The wretched ground forces one to walk or trot, and the patches where one can gallop one's horse are easily counted.

Our goal for the day was Hill Cove, one of the finest settlements. With its numerous, friendly-looking buildings and its beautiful gardens it produces an

uncommonly agreeable impression. Widely known is the "forest" of Hill Cove. In a little depression a number of northern trees are planted, mostly Scotch fir, which, being well sheltered, seem to thrive very well. It was pure delight once more to hear the wind soughing in the heads of the trees.

We were received with the usual hospitality, and were provided with horses and guides, in spite of its being the busiest time of the year, when the sheep-shearing was on. Flock after flock was driven into a paddock, and from there to the shed, where the thick white wool was cut with clicking scissors, until one almost thought one heard the resultant heavy golden sovereigns jingling on the floor. Sheep-farming is a profitable industry, and many of the farmers are able every year to exchange the winter in the Falklands for England's summer.

The total stock on a settlement is divided into flocks, each watched by a shepherd, often a Scotsman. He lives out in the camp, sometimes far away from other human dwellings, in his snug little house, with his family, his dogs, and with good pay; he can keep a couple of cows, grow potatoes and cabbages, and use as much peat as he needs for fuel. Certainly his life is hard enough in summer-time; there is lamb-marking, shearing, and finally dipping, and no thought of a rest; but with winter comes an easier life, when he works with his horse-gear or reads sixpenny books and illustrated papers. Now and then he takes a ride round his district, gives an eye to the sheep, and sees that fences and gates are in order. We made many friends amongst

the shepherds, who brought us safe through the thousands of dangerous bogs, offered us a seat at their table, and gave us a bed without any thought of payment.

The land south of Hill Cove is mountainous, and a few hours' ride brings us to the foot of Mount Adam, 2315 feet high, the highest mountain in the islands, and regarded as a very Mont Blanc by the islanders. As no scientific observations had been made there, we resolved to make an ascent. From Hill Cove we had to cross several ravines, but were able to ride up to the summit itself without inconvenience. Here we found the face of Nature very different from what we had been accustomed to! From the mountain-top we enjoyed a splendid view over half West Falkland, suggestive of Alpine landscape, certainly very tame, but still adorned by small snow-patches, a number of glittering mountain-lakes, and a few Alpine plants. Here were no sheep, but an expanse of virgin ground decked by the hand of Nature. And the weather! This wonderful everlasting April was very gracious to us all day long.

We did not intend to stay long in Hill Cove, for the schooner which was to take us to Stanley might be expected in Fox Bay before Christmas, and we had several interesting places to visit. Our start, however, was almost too precipitate. One of the brothers Benney from Saunders Island came to the farm, and in spite of not having more than an hour to make ourselves ready, we made up our minds to accept his invitation and visit his island. We trotted away, a party of four, in order to reach Rapid Point, where a boat was to meet us

before nightfall. But we were indeed deceived. When we reached the beach it was already pitch-dark; but horses have cats' eyes, and soon we had a fine signal-fire on a hill. After a while the reply flashed forth from the island, but when the boat came it proved too small to take us all, as Halle and I were not expected. As the tidal currents in the channel are very strong, we could not be sure of being fetched the same night. We were told, however, to wait for a signal—one flash meaning a disagreeable ride, two a boat journey to the island. The night was very chilly, but we made ourselves as comfortable as possible with a queer camp-fire of gigantic dry trunks of seaweed (*Lessonia*), and Mr. Benney found some tea and sugar in his "maletas" (valise; many Spanish words, especially referring to horse-gear, are still used in the islands), so we had nothing to complain of. Midnight came, still no message; but at last two flashes illumined the darkness, and after a while we heard the longed-for splash of oars. We set off, but as we could hardly see our hands before us, the current took us outside the reef between Rapid Point and the island. The breakers told us the truth, and using all our strength we managed to reach the reef, jumped into the water, and dragged the boat across. Before a neatly laid table and some fat mutton we soon forgot the adventures of the night.

Saunders Island is one of the few places on the Falklands to which historical reminiscences are attached. The discovery of the islands took place in 1592, though they may have been sighted even before 1520, but only in 1764 was the first colony founded by the French,

who settled in Port Louis, on the East Falklands. The next year the English appeared at Port Egmont, and built their quarters a short distance from the actual settlement. But soon Spaniards from South America cast envious glances at the colony, and as the enemy was superior in numbers the fort at Port Egmont was given up. Old cannon-balls are still preserved, and several other relics such as the foundation-walls of the fortress, while traces of extensive gardens and ruins of the old settlement are still left. Later on the Spaniards left the place, colonisation proceeded once more, but only for a short time, and in 1774 the place was abandoned.

We had enjoyed Falkland summer weather for several days, but it was not long before it broke up. We were just on our way back to the mainland in a small yawl when the first squall came on us like lightning, and within half an hour the sea was so heavy that we were forced to turn back and had to cross in a small cutter. The narrow channel looked like a boiling cauldron, as the current ran against wind and sea; several times the cutter refused to answer the helm, but we managed at last to reach the mainland, where horses were once more awaiting us. The rain poured down, the ground was very difficult, wet and slippery, and progress very slow. We passed the natural ruin of Castle Hill, crossed five rivers, of which the last is the main river Warrah, the others its tributaries, and reached a shepherd's house at nightfall. Horses from Port Howard met us here, and early the next morning we again found ourselves in the saddle. We wanted to

survey the valley of Warrah River, which is one of the largest streams in West Falkland. At that time of the year, however, it carried but little water and we could cross without difficulty. We followed the barranca, which became steeper and steeper, necessitating our riding in single file, with the guide in front. Suddenly he stopped and shouted out a "Look out here!" Truly we could hardly see any signs of a path; a couple of hundred feet below wound the river, on our left a precipitous wall rose, and the narrow way was barred by huge blocks of stone. For an instant the horses seemed to hesitate, groped among the stones, got a foothold, took two or three unsteady steps, and scrambled past the obstacle. A slip, and horse and rider would have been precipitated into the river. "Rather a nasty place," our man remarked, and neither of us found any reason to contradict him.

We followed the river down to the place where the tidal region commences, crossed it once more, struggled a while with the network of a stone-run, and turned towards Port Howard, whose interesting natural harbour I would ask the reader to study on the map. Once more we found ourselves in a large and comfortable settlement, where Mr. and Mrs. Mathews gave us a hearty welcome, always ready to put that question to us which we heard so often: "What can we do to make it comfortable for you and to help you to attain good scientific results?"

The bad weather continued; we made our excursions in storm and rain, walking about in oilskins. One day we made an ascent of Mount Maria, one of the highest

mountains, and only a little lower than Mount Adam. But as the ground is uncommonly bad, the slope being one extensive network of stone-runs, we had to travel on foot. The rain poured down as we climbed along, and suddenly we found ourselves enveloped in a fog so dense and white that the view was shut off in all directions. It was certainly more by good luck than by good judgment that we walked straight on to the little cairn at the summit.

Our stay in Port Howard yielded very good results, and with regret we said good-bye to our hosts, jumped into the saddle, and headed for Fox Bay on the south coast. We were accompanied by the mail-carrier. After a long and tiresome ride we reached our goal. Here lives the doctor of West Falkland; on the occasion of our visit the position was held by Dr. Bolus, who received us with the utmost courtesy and kindness. This young doctor was a good all-round man, for besides his proper duties he fulfilled those of custom officer, policeman, postmaster, and public registrar. Being a spirited fellow who rides alone by day or night in any weather, he had many tales to tell of hazardous rides, when snow covered the dangerous bogs; how he reached the western sea-shore, jumped into an ice-clad boat, and struggled through storm and mist to one or other of the outlying islands, where a fellow creature lay wrestling with death.

Meanwhile the *Lafonia* lingered. We had already made ourselves familiar with the thought of celebrating Christmas Eve with Dr. Bolus and his wife—it did not cause any mental struggle, as we could hardly have been

better off than in their cosy home—when on the afternoon of December 22 the schooner entered the narrow creek. It brought us our mail, and, from the consulate in Port Stanley, the news of King Oscar's death. And down here, in a remote corner of the Falklands, two blue and yellow flags were hoisted, half-mast, on the doctor's house and on the little schooner. The next morning the *Lafonia* weighed anchor. The wind was north-easterly, a rather uncommon occurrence, and with some misgivings we regarded the approaching Christmas Day. I believe that we never experienced anything like it. The small schooner rolled incessantly with a hard wind and heavy sea; we ran short of provisions, and there were no possibilities to raise our spirits.

Gnawing at the last mutton-bones, we arrived in Stanley in the evening of Boxing Day, but found the capital empty. In a deluge of rain horseraces took place outside the town, and of course all the inhabitants had placed themselves under their umbrellas. But we stayed at home and ate, quickly, but heartily. Thus Christmas passed, and 1907 was soon only a memory. We sat up to see the New Year in with some of our English friends, who did all they could to make us feel at home. And warmed by their friendship we almost forgot that we were far away from our homes and everything dear to us.

We did not intend to stop long in Stanley, as the time had come to survey East Falkland. We had done but little there, and the most interesting part was still left. As soon as a schooner was ready, Halle went to

Port Darwin, in Choiseul Sound; I had to complete my studies in the vicinity of Stanley. The camp revelled in the beauty of summer—everything in this world is a matter of comparison!—and the life on the rocks round the lighthouse once more attracted me. But Halle sent a message telling of great geological discoveries, and on January 14 I went on board the *Lafonia*, which could thus hoist the Swedish colours alongside of the English once more. We came out through Port Williams all right, and also passed the tussock-islands, where the sea-lions lay snoring. From there we had a miserable run, having to beat all the way down, and did not arrive at Darwin until late the next day.

The south part of East Falkland, south of Wickham Heights, does not differ much from the rest of the island in appearance. With the exception of a very doubtful find on Speedwell Island, nothing indicated that layers younger than Devonian would occur on the islands. Halle's discovery that the whole south part of East Falkland, generally called Lafonia, belongs to a younger period, viz., the Permo-carbonian, was thus of great interest, and in several places he made beautiful and valuable collections of the fossilised remains of plants (*Glossopteris*) which had once spread their shadow over the Falkland soil. Lafonia is owned by the Falkland Islands Company, and about 200,000 sheep graze on the undulating plains. We found here the largest pampas-like spots I ever saw in the islands, and enjoyed being able to travel at a fair speed. Otherwise the camp was more or less the same as usual—the same winding creeks, that appear in the middle of the country

when you do not at all expect them, forcing you to make a long *détour*, the same streams slowly creeping through the treacherous peat, sometimes impassable, and always difficult to cross on horseback.

The coast, of course, is as charming as ever with its rich bird-life, flocks of many coloured geese (*Chloëphaga*), red-legged gulls (*Larus Scoresbyi*), flapping shags, and a long row of squeaking waders; and its cliffs with guano and white rocks, sculptured by the waves into fantastic forms and tunnels.

Darwin Harbour is the camp centre of the F.I.C. It is the next largest settlement, with about seventy or eighty inhabitants, and boasts of a good store, a school, and also a doctor.

When we had crossed Lafonia in all directions we wanted to pay a visit to the west coast. Several days of heavy rain had soaked the camp and delayed our start, but finally we were able to set out, accompanied by Dr. Foley, who kindly acted as our guide. We soon left the plains and reached the usual broken ground; the wind was biting cold, and now and then a wet squall paid us its attention. Suddenly a long creek appeared; it was Port Sussex. The tide was out, and our horses splashed across cheerfully, making deep imprints in the smooth mud. Carefully they climbed the stony barranca on the other side; as they were not shod they hated stony places, and peered to right and left in order to see if there was no chance of breaking out. The doctor had pointed out a rock high up on the grey quartzite ridge; that was our landmark. The ascent was troublesome; the ground had become covered by

The great stone-run south of Port Louis, East Falkland.

loose peat and the horses began to get tired. On the top of one of the ridges we met with a critical passage, for which the doctor had already prepared us; a place where the pure peat, brown and loose, was exposed. At the edge the horses stopped with firm resolution, and we could read in their faces a "No, sir, that's enough." We dismounted, grasped the long cabresta (halter-strap) and pulled away. Absolute refusal; we pulled each at his end, the horse and I, and the stronger won. Then the lashes hailed down on the back of the insubordinate creature, it took a desperate jump, lay kicking and struggling in the black mud, and finally gained firm ground. We had passed the crest of Wickham Heights, and rode down a series of slopes to San Carlos South, a farm where the doctor was to vaccinate some children. As soon as he was ready, we started again. Night was coming on, and we neared our goal, the San Carlos valley, where the largest river of East Falkland winds its way along, deep and rapid. On the other side sharp crests rise, and at their foot we sighted the settlement, San Carlos North, where we were received with the same kindness as ever. The next day we returned to Darwin. I was anxious to return to Stanley, but delayed my departure as long as possible, as I wanted to make an ascent of Mount Usborne, the highest mountain in East Falkland. But the rainy season would not come to an end, and finally I had to leave for the town. This time I took the route overland. I asked Halle if possible to climb the mountain and make some observations for me, and as he was able to fulfil his mission I had no reason to complain.

The track to Port Stanley follows the southern slope of Wickham Heights. It is one of the very worst in the islands (especially after a long rain like the one we had experienced), and near the town stone-runs appear with dangerous holes, covered by vegetation. We changed horses twice, and easily covered the distance, about sixty miles, in two days. Covered with mud and soaked to the skin, I rode into the town on February 1. Only twelve days were left till the day when the mail-steamer for Punta Arenas was due, and much work had still to be done. Amongst other things I would not willingly leave the islands without paying a visit to Port Louis, where J. G. Andersson and myself had lived some time during the winter of 1902. Port Louis is the classical ground of the Falklands. Here lie the ruins of the old settlement; here Charles Darwin strolled about; here J. D. Hooker collected materials for his famous "Flora Antarctica"; here the *Challenger* was anchored. All these memories crowd upon the mind of a naturalist of to-day and cast a halo round the brown, desolate heath.

Several historic ruins are left in Port Louis. Here in 1764 the first settlement was established by the French; a few years later Spain took possession of it, but probably withdrew the garrison before 1780. In 1820 the captain of a vessel took possession of the islands for the Government of Buenos Aires, but in 1833 a British man-of-war was sent to enforce England's rights, and since 1843 the Falklands have been constituted a Crown colony. For further details I refer the reader to Darwin's journals, as well as to a paper read

by the present governor, Mr. W. L. Allardyce, C.M.G., at the meeting of the Royal Colonial Institute, March 22, 1910. During the last days of our stay in Port Stanley everybody was walking about rife with expectation. A man-of-war, H.M.S. *Sappho*, was due, and from the camp the young ladies came to the town prepared for a dance or a picnic. Some years ago a man-of-war used to be stationed in Stanley for several months every year, and opposite the town expensive constructions were made, a dock was built, and large coal-sheds erected. But hardly was it ready when the whole scheme was abandoned, even the stationed vessel being withdrawn, much to the grief of the Stanley girls.

At last the *Sappho* came, but by this time our period of rest had nearly elapsed. Halle returned from Darwin, we had to prepare our heavy luggage, and when the *Oronsa* let her sonorous voice be heard she found us ready. On February 12, a bright summer day, the barren coasts of the Falkland Islands disappeared from our sight—perhaps for ever.

The big steamer hastened westward, and soon the lights at the Magellan Straits twinkled in the twilight. As we approached Punta Arenas the sky shone bright red, and with the glasses we soon found out the reason: the forest south of the town was on fire; it made a mighty lighthouse that showed us the way to the roads, where we anchored at 1 A.M. on February 14.

CHAPTER III

IN TIERRA DEL FUEGO

In front of us stretches the long, yellow, sandy sea-shore, with slender jetties running far out into the shallow water; in the background rises the land, with forest-clad ridges and hills. Between the forests and the sea extends Punta Arenas, the town of the Magellan territories, a good type of mushroom city with a startling story of development behind it. In the last ten years its population has greatly increased, and more than 12,000 people now have their home there—Chileans and Spaniards, Germans and Englishmen, Frenchmen and Italians, Swedes, Norwegians, Danes, Russians, Austrians—a babel of tongues. Pretentious stone buildings, interspersed with corrugated-iron houses, dozens of hotels and American bars, howling gramophones, the rattling of cocktails in the mixing—that is the first impression. We take up our quarters in the traditional retreat for Swedish scientists, the Kosmos Hotel, a low, white-plastered building on the sandy beach.

We now found ourselves under changed conditions and with a starting-point for our work where we knew nobody and where we had to do with authorities speaking a language not very familiar to us. I had almost expected that Quensel would be back from his

The Roads of Punta Arenas, south-wester blowing.

Punta Arenas from the Hills.

survey of the interior of South Patagonia, but there was not even a message from him. Neither had we received any reply from the Chilean Government, and the entire future of our expedition would possibly depend upon their answer. So we started at once with short excursions in the neighbourhood; Halle found a vast field for work in the coal-mines in the narrow valley of Rio de las Minas. A few days after our arrival we had just returned home when our landlord, the ever kindly and good-humoured Brockow, told us that a Swedish gentleman had just arrived and wanted to make our acquaintance. Judge of my astonishment when we found him to be the highest representative of Sweden in Chile, Consul-General A. Löwenborg, who had employed a short period of leisure in running down to Punta Arenas in order to welcome us and render us assistance in our dealings with the authorities. I know that if I now tell him that we shall never be able to thank him sufficiently for all he did for our expedition during its work in South America, or for the hearty personal friendship he showed us, I do not say too much.

Now we could begin preparations for our first excursion in real earnest. The governor of the territory, Señor Chaigneau, received us with great courtesy, and Mr. Löwenborg brought the answer from the Government that the naval station in Punta Arenas had already received orders to do everything possible to promote our success. The chief, Rear-Admiral B. Rojas, put the small steamer *Huemul* at our disposal for the first voyage—to Admiralty Inlet, in Tierra del Fuego.

These preparations having been made, we completed

our party. We were sitting at the dinner-table one evening when a wild, red-bearded camp-man entered the dining-room in the Kosmos; it was Quensel; and we instantly followed him out to the courtyard, where his servant for the summer, the German Albert Pagels, was busy unsaddling the horses. In the most glowing terms they gave us a brief description of their travels in the most remote part of the South Patagonian Alps, so prolific in results that from that moment I longed to go there myself, but entertained little or no hope of being able to do so, as this lay beyond our original scheme.

Now we could make ready. The horses were sent to a paddock, we bought hay, maize, and provisions, and looked over and completed our equipment; for once alone in a virgin country nothing could be procured. When I had discussed Pagels' qualifications with Quensel, I engaged him for the trip, and asked him to bring another man with him, and as a result a fellow with the not particularly uncommon name of Müller joined our party.

Now follows a hurry and a scurry and a sorting of half-packed boxes! Is nothing forgotten? The *Huemul* is waiting at one of the jetties, the last nails are driven into the lids of our boxes, and finally the cart jolts over the bumpy streets of Punta Arenas. All of us work like niggers; bags of maize, bales of hay, and boxes of all shapes and sizes are taken on board. Now only the most difficult affair is left—the embarkation of the horses. We tried various devices, but at last found that the only way was to use the derrick on the jetty.

A lifebelt of special construction was employed, and wild with terror the animals were hauled swinging and kicking high up in the air, to land safe and sound on deck. We felt easy when all four had been transferred, but there was not much left of the limited deck space.

As Punta Arenas is a town full of temptations, we went on board in the evening in order to be quite sure of getting off early the next morning. At daybreak, February 25, our vessel left the roadstead. Our first visit was to Dawson Island, where the Roman Catholic Salesian mission station has long been established. They have partly converted the land into a sheep-farm, with Indians as labourers. The station in Harris Bay is an imposing collection of buildings. We went on shore, and were very well received by the missionary, a stout and shining *padre*. He had already found time to send the boys to make themselves presentable, and they appeared in more or less queer dresses, but looking rather well-brought-up. Few of them were pure Indians: mostly they betrayed a rather mixed origin, a fact perhaps somewhat remarkable at a mission station! Under the guidance of the missionary we went round the place, inspecting the church bedecked with cheap finery, the school, the small saw-mill, and so on. Certainly they have seen to it that the hitherto empty life of the natives shall find a real object and meaning. One thing, however, is of little account—the Indians themselves. According to what the bishop in Punta Arenas, Monseñor Fagnano, told me, there are only forty-five in the station, most of them Onas, but there are also some Yahgans and Alookoloop. The

number is gradually diminishing. It is the old story; the natives are subdued or won over, put into clothes, forced to live in houses, and turned into labourers; in some cases perhaps their life gets easier, but with the kind of civilization imposed on them, absurd and more than shallow, there follow diseases and a misery unknown before. What the naked Indians can stand is too much for Indians in European clothes; they pine away and die in "the true faith." But perhaps there dwells in the depths of their expiring souls a question never uttered: "What have we done that we should be taken away from our land, that we should be exterminated from the face of earth?" How many of them there are who really consider themselves indemnified by the liberal and, alas! cheap promises of a place in the special heaven of the Church that "rescued" them I cannot tell. But how men can imagine that by putting people whose mental life has proved to be so little developed and so utterly different from our own on the seats in church and in school they can be got to grasp those intricate dogmas that have caused and still cause so much hatred and dissension amongst ourselves—that I confess myself unable to understand. I should, indeed, like to hear a religious dispute between a Lutheran and a Catholic Ona-Indian!

To-day there is much spoken and written about the necessity of preserving natural scenery, rare animals, &c., and all naturalists encourage the general tendency which has already evoked special laws in various States. But we seem to think more of remarkable animals than of human races. Could we not at least

refrain from directly preventing the continued existence of interesting forms of *Homo sapiens?*

Most of the male inhabitants of Dawson Island were away working in the camp, and we only saw some sick or feeble ones, who were seated outside their doors making Indian curiosities, to be sold by the missionaries in Punta Arenas. In a special house the women were occupied in spinning. The camera was familiar to them all, and with the aid of the missionary I was able to take a group, but it was more difficult to obtain permission to snap them in the costume of Adam. However, I managed to take photographs of an old married couple of Alookoloop, but they anxiously asked me not to show them to anybody. *Cuisc-shiku-toreluk-scisc,* my good fellow, your brown skin still glistened under the miserable rags you wore, besmeared as it was with stinking grease, that called forth old remembrances! Have you then forgotten that you are baptized and call yourself Brasito and that it is strictly forbidden to practise such uncivilized customs?

I asked them in Spanish, a language their tongues convert into a scarcely intelligible lingo, how their lives pleased them and where they came from. "She comes from afar," the husband says, pointing to his wife. "From the channels far west?" She nods assent, and adds: "There we were so many, so many, and now"—her voice expresses desperation and helplessness—"all dead, all dead! . . ."

But all round us in the forest dozens of images and pictures of saints bear witness to the triumph of Christian civilization.

A fresh breeze met us when we steamed out of the mission bay, and the *Huemul* rolled with might and main. Our horses had some very disagreeable hours; they were not far from falling overboard, or at least getting injured. After a short consultation we resolved to seek shelter from the rapidly increasing gale. There are very few harbours in Admiralty Inlet, and probably none better than Puerto Gomez, where we anchored; a true Fuegian cove, with the water-soaked virgin forest coming down to the water's edge, with steep, wooded ridges all round and snowy peaks in the background. The autumn scarcely shows its presence here, only the grass on the beach is more yellow than usual, but the forest itself stands as fresh and green as ever, even if the few flowers are still fewer. That day the winter sent us its first warnings, and we awoke to a splendid though hardly welcome sight: the summits shining white, the ridges powdered with snow, and a light cover on the branches of the evergreens down by the beach. But the squalls grew less frequent, the sun spread broader and broader golden stripes over the bank of clouds, and once more we tried our fortune afloat. Halle and I inhaled this fresh atmosphere in deep draughts. The enviable Quensel had just come from Payne, but we who saw only dirty colours in the Falklands thoroughly enjoyed the black mountains, the white snow, and the bluish ice of the glaciers. Farther and farther into the deep fiord we steamed, the mountains closed round us on each side, and in the innermost corner, called Hope Bay on the Admiralty chart, a pretty place where deciduous-

Back from the Betbeder Pass.

SKOTTSBERG IN MIDDLE, QUENSEL TO LEFT, PAGELS TO RIGHT.

Indians at the Dawson Mission Station.

leaved forest patches shimmer in the first crimson of autumn, the *Huemul* anchored.

First we had to bring the horses ashore. Here luck helped us in a peculiar manner. Outside Dawson Island we found a lighter adrift, a runaway from Punta Arenas, and it came as though sent on purpose. The animals were lowered down from the davits, once more half dead with fright, but soon recovered when they found the good pasture along the shore. Our equipment was put in a heap on the shingle, and we set out to look for a comfortable camping-place, and soon found an inviting corner on the edge of the wood. Instantly we pitched our tents and hoisted our little Swedish flag. At the request of our friend Captain Mayer we returned on board, had our dinner with the officers, and slept there. Early on the 28th the *Huemul* steamed out of the bay, hooted us a good-bye, and was soon out of sight. We were left to ourselves for a month.

But we had not yet reached our goal. Towards the east we had to follow the valley of Rio Azopardo, and there, behind the woods, is the big lake, Lago Fagnano. The distance is only eight miles, but these few miles have a very bad reputation. Some remarks on explorations prior to our own might be mentioned here. The first proper description of the lake and its surroundings we owe to the well-known Boundary Commission of Chile and Argentina, which finished its work here in 1895, and had then erected a cairn at each edge of the lake to indicate the boundary-line; the members had also effected some boat-journeys and had constructed a map. The natural history still remained

unknown, and the Swedish expedition in 1896 under O. Nordenskjöld resolved to pay a visit to the big lake. He and his companions had their encampment not very far from ours, and we found some traces left by them and others of the Boundary Commission; especially a wooden corral, which we put in order and used ourselves.

Nordenskjöld was only provided with food for a fortnight; he brought many people with him, and a rather big boat, intended for the navigation of the Rio Azopardo. This, however, proved impossible, and he was never able to make a camp on the lake. Accompanied by one man, he made an excursion on foot, crossed the valley of Rio Betbeder, and saw from the slope of a mountain, probably Cerro Verde, that a pass over the main ridge, called Sierra Valdivieso on the Chilean map, very likely existed. The pass itself can hardly have been visible from the spot where he stood. Of the nature of the lake this expedition has very little to tell: Nordenskjöld alone got close to it.

In October 1902 J. G. Andersson, well known as a member of the Swedish Antarctic Expedition and the leader of its winter-journeys, managed to reach the eastern end of the lake, using a road cut through the forest by the brothers Bridges of Harberton, a track that united their vast camp at the Beagle Channel with that on the Atlantic coast. He brought a small canvas boat and made some zoological collections from the lake, but everything got lost in the shipwreck of the *Antarctic*, in February 1903. Consequently we had an open field for work; but time was valuable, as the winter might come any

day. I think that autumn is the best season for travelling in the interior of Tierra del Fuego; summer has dried the innumerable bogs and made them to some extent passable, and the rivers, that all come from the eternal ice and snow, do not carry as much water as they do earlier in the year.

We set to work without a moment's delay. One of the officers on board the *Huemul* had told us that some of those indefatigable prospectors had left some sheep on a small island not far from our camp, and we sent Pagels there with our canvas boat (on the Berthon system), which was now launched for the first time. Müller was left at the tents, and we started on foot up the Azopardo valley in order to survey a suitable track for the horses. We only carried a couple of ship's biscuits each for provisions. The first mile did not look very bad. It was, however, impossible to follow the bank of the river, as it is covered by an almost impenetrable brushwood of *Nothofagus antarctica*, one of the Antarctic beeches (ñire). We followed the slopes of a mountain-ridge south of the valley; sometimes the ground seemed very dry and firm, sometimes we had to walk knee-deep through red and greenish-white peat-moss. Now and then we came across a forest patch where we had a hard struggle with innumerable fallen trunks, marshy places, and thorny bushes. But we thought that an axe might open a way for horses, especially along the guanaco tracks. Arriving at the top of a hill, we stopped in mute admiration. There between steep mountain-chains we beheld for the first time Lago Fagnano in the far east, melting together with

sky and mountains in a blue haze. It was still early in the day, and in spite of our meagre supply of provisions we resolved to continue our march down to the lake. And we had good luck. We were just climbing the barranca of Rio Mascarello when we discovered a guanaco not more than ninety feet from us, grazing in unconscious security. We had not been observed, and a ball from our Winchester sent it into eternity. The meat was certainly very welcome. We had counted on living upon game, and had only brought some preserved meat for excursions. The big steaks were greeted with applause; one piece we put in a knapsack for dinner, and the rest was fixed on a tree out of reach of foxes and birds.

The guanaco (*Auchenia huanaco*) is closely related to the lama. When with straightened neck it slowly turns its small, elegant head, pricks up its ears, scenting danger, it makes a very pleasing impression of something at the same time strong, swift, and graceful. The nose is grey, the back covered with a reddish-brown wool, the throat and belly white. The thighs are red-brown, the legs white. Smaller or larger herds wander about in Tierra del Fuego and Patagonia, mostly on the pampas, but also at the edge of the forest-zone on the slopes of the Cordillera, where green patches and rich Alpine meadows are their favourite grounds.

We had already passed several "pantanos" (peat-bogs), with red, swelling tussocks sharply contrasting with the dark-green forest patches, but we now came to that part of the valley where all the open spaces are filled with marshy ground. We could cross all right

if we chose our way, but we at once realized that the horses would never follow our example. Here the forest gets still worse, the river runs close to the mountains, only leaving a very narrow space. To cut our way round bogs and forest higher up on the slope was not to be thought of, and further progress looked doubtful. But it was better here and there, and we felt hopeful till we came to the last mile. No horse would ever come through that; we should have to carry our own luggage.

We stood on the shore of Lago Fagnano. This fact did not elate us unduly; it was simple enough to walk there; but the thought that we had reached our longed-for lake on the same day as we landed afforded us some amusement. With gathered driftwood we made a good fire and dried our clothes. Fixed on a stick, the guanaco meat soon became a regular "asado" that tasted very good, with a biscuit and water from the lake. A few yards from the shore we found a suitable place for the night in a grove of *Nothofagus betuloides* (coiguë), the evergreen Antarctic beech, and beautiful Winter's bark (*Drimys Winteri*), and we made our beds of fragrant branches round a roaring fire that sent showers of sparks through the dark night. The sky was clear and cold, but we maintained the fire and slept well for a while with the knapsack as pillow. We had not brought our sleeping-bags.

The ground was covered with hoar-frost when at dawn we crept out of our nest. After eating the last piece of biscuit we walked back to our camp, keeping a desultory look-out for new tracks for the horses.

How inviting the camp looks on our return! the tents shining white at the forest's edge, in the pots our dinner cooking with a cheerful sound, and at a little distance our horses grazing peacefully! Is there a truer sense of happiness and freedom than when the tent or the sky is your roof, the ground your bed, the camp-fire your hearth? In front of us, on the other side of the fiord, Mount Hope raises its jagged porphyritic mass, and icy crests peep forth behind it. The sun beams from a clear blue sky—it is still summer in Tierra del Fuego.

Pagels had not seen any sheep, but had shot some kelp-geese (*Chloëphaga hybrida*), which, however, are generally considered as inedible. We had not been able to find our store of guanaco again when we returned from the lake, so, untroubled by a belief in the omniscience of authorities, we prepared the disdained geese and ate heartily of the dish.

The first day of March was occupied by Halle and myself in a survey of the valley of Rio Fontaine, which discharges into Admiralty Inlet. Its nature closely resembles that of the Azopardo valley. Quensel and Pagels went to look for the guanaco meat and found it. In the evening we collected all the things to be brought up to the lake with the first transport, and at night everything was ready. One of the horses had been injured in landing, but the rest were saddled early the next morning, and the first caravan, under the direction of Quensel, soon disappeared among the hills. The next day Halle and I made an ascent of a mountain behind our camp. The worst part of a Fuegian mountain is the forest belt, but sometimes one may get

help from the winding paths of the guanacos. Thence one wanders free and happy over meadows adorned with flowers or across slopes of rattling stones, where small herds of guanacos with elegant tails gallop away, neighing merrily. From a summit we had a very fine view of the lake and the surrounding landscape. As we were studying it through the glasses we discovered some black specks at the bottom of the valley—the caravan coming back—one, two, three men, one, two, three horses. Good! At once we hastened down to the camp, anxious to hear their experiences, in which truly the trip had been rich enough. The track surveyed by us was of little use—the dry ridges where we had walked so hopefully were covered by peat, hardened on the surface, but not strong enough to carry the weight of a horse. Each horse had nine times been bogged so badly that it had to be unloaded, dragged out of the peat, and loaded again—twenty-seven times altogether! After eight hours' desperate effort a distance of four miles was covered, and the cargo had been deposited at the Mascarello river. Thus it was evident that we should have to carry all the luggage for the rest of the way. We hastily selected provisions for fifteen days, packed our 8-feet collapsible Berthon, and divided everything into two horse-loads, as one of the horses had proved unfit for transport of that sort. The rest was put together in a depot, and early on the 5th we struck camp.

We advanced slowly and without adventure till we had passed the first small tributary, when bad luck attended us. The horse with the boat and tents was

badly bogged, capsized with his cargo, and lay groaning under the heavy load. To make matters worse, it happened on a steep slope, and we barely managed to save him from tumbling down into the river. Standing knee-deep in the loose peat, we unloaded him, turned him round, and got him on his feet again. He bled, but not very much. To give him the same load was impossible, as the ground grew worse still, but Müller and Pagels took the boat on their shoulders and continued the march. Now the horses had an easier march, but were of course bogged now and then. We dragged them across the worst places, one hauling at the cabresta, the two others walking by the side of the staggering animal supporting it. Nevertheless we got on, cheered the depot, and sent the horses back. I continued the way with our men, and we brought three loads up near to the lake. At nightfall we all gathered at Mascarello, and soon forgot our troubles round a mighty fire, although a treacherous trunk made me capsize the appetizing pea-soup, just as we were ready to devour it with the appetites of lions. Another spell of impatient waiting was spent in discussions of what the coming day might have in store for us. We all felt that now the real hardships were about to begin.

The loads were distributed in a very simple manner. Everybody took as much as he could carry, and a procession of five individuals started. Progress is not rapid, the steep riverbanks make our knees bend and our backs ache, the sun broils us, impudent flies torment us. The conversation is not very lively. Somebody throws his burden down, the others follow his example; we

straighten our backs, wipe our brows with dirty shirt-sleeves, and fall flat on the ground; mechanically we chew a biscuit or a piece of chocolate—there is no time for dinner. Up again, through the thickets, where thorny bushes scratch our faces and bare arms, where every minute the load is caught in the dense branches, where mouldering trunks trip us up; through the bogs, where the oozing surface makes walking heavy work, through the ravines, where we *must* stop to drink the pure, cold water that comes directly from the melting snow. What delight when we catch a glimpse of the lake! With a sigh of relief we throw off our burdens on the shore. Here we found the boat and the flour-bag left on the previous day, and we pulled round a cape and landed in a sheltered bay, called Expedition's Cove. We walked back again to Mascarello in order to make an early start the next morning. Some things were left there as a reserve depot, the rest we took on our shoulders and trod the same old wretched way again. Thus our camp at the lake became a reality, our first destination was settled; the Swedish colours floated in the heart of Tierra del Fuego.

The tent door is wide open. In most cases the chilly mornings tempt us to enjoy the warm comfort of the sleeping-bag for another five minutes, but to-day it is not possible. Not a leaf moves. The lake lies shining like a mirror, only furrowed by a mated pair of patova-pores (steamer-ducks or loggerheads, *Tachyeres cinereus*), that glide away chattering merrily. The mountains on either side rise clear and sharp against the sky, one behind the other like gigantic wings; close to us

dark green with shades of red and violet, on the crests they gradually change into a bluish grey. In the background the rising sun over the water, a splendid white sun, promises us a magnificent day, sending us its greetings and illuminating every corner of our camp. Out from the bags, a speedy toilet, and as Pagels announces "Porridge is ready" we gather round the cauldron. Round the fireplace we put some big logs as sofas, make ourselves comfortable, and with often-repeated words of praise consume large quantities of oatmeal porridge and coffee with biscuits—and if three or four guanaco steaks should happen to go the same way, there is nothing to say against that. The work may be hard, but days like this make everything easy, mapping or geology or botany. The sunbeams play on the velvety moss-carpet, with infectious laughter the stream falls down the precipice. Can any but bright faces gather round the fire when twilight falls over Lake Fagnano? Fixed on a stick over the embers our asado is roasted, delicious enough to make one's mouth water. The teapot sings, we light our pipes—this is the hour for stories. Pagels has an inexhaustible supply of stories from real life, for he has indeed seen a little of everything. What do you say to a fellow of thirty, who has been sailor in the German navy, boatswain, sealer, gold-digger, who has traversed half Patagonia on horseback, has smuggled troops into Central America, and assisted at the capture of Peking during the Boxer rebellion? He was indispensable on our boat-journeys, the type of Teutonic giant, used to all sorts of tricks on shore as well as on sea. Certainly

he did not hide his light under a bushel. Sometimes he would make us half desperate with his patent dodges; he was always so absolutely sure that it wasn't worth while to try any other method than his—that there could not exist a better! Müller, with his pale face fringed with a big black beard, was more timid, but when he loosened his tongue we soon found him to be a rather well-read man, who was up to date in many things, especially in politics. He had arrived from Brazil, shook his head at the Fuegian weather and pulled his cap over his ears. After dinner, just when we are ready to go to bed, he puts his private kettle on the fire and the *yerba* or matê makes the round. Night has come; Prince, the expedition dog, is asleep with a guanaco bone, and the last embers show us our way to the tent.

The first days we were very busy with detail-work in the vicinity of our cove. Halle made a map, Quensel studied the geology, and I myself made botanical excursions, tried the boat, and took soundings in the western corner of the lake. But we could not put off the excursion to the Betbeder passage over the mountains, to which I have alluded before, and on March 10 we started, Quensel, Pagels, and I. In our knapsacks we carried a pair of socks and provisions for four or five days; the sleeping-bags were tied to the sacks. After a hard climb up the slippery slopes, sometimes on our hands and knees, we reached a ridge, but the view to the main Cordillera was still shut off by several summits. To the left there was no way, to the right was a peak sloping sheer down to piles

of sharp-edged slate-blocks. Pagels had hastened ahead, and shouted to us that he could see a way round the summit. With great care we groped round the precipitous wall, making use of fissures and narrow shelves that gave way under our weight, and after climbing some hundred feet more we finally reach the eternal snowfields at a height of about 3000 feet.

We stopped here a while in order to get an idea of our position and to make up our minds how to continue. The view was certainly splendid. All round us bright green Alpine meadows, black *débris* or white snow, below the small characteristic valley-basins, sometimes occupied by a small glacier or furrowed by icy brooks, surrounded by an emerald-green moss-carpet and the last flowers of autumn. If we compare the Alpine flora of Tierra del Fuego with, for instance, that of Europe, the former without doubt is left far behind, but nevertheless it has the same peculiar stamp, the same gay colours. Our looks sweep over the plateaus; not far from us our destination, Sierra Valdivieso, rises, and in the distance the summits of Darwin Mountains, one of the highest parts of Tierra del Fuego, shine like diamonds. Silence and desolation reign over this height; only a single guanaco neighs and takes to flight, and a condor majestically soars over our heads.

As to the direction in which we should find the pass the maps had misled us; we had made a long *détour* and the day's labour had partly been thrown away. We were forced to climb down into the Betbeder valley

and follow it up to the pass. Without hesitation we left the mountains and dived into the brushwood. I think that we shall not easily forget this expedition. The tough branches clung round legs and arms, and only after we had lost our patience did we really make any progress. The mountain-wall falls off nearly at right angles; when the hands grasped for the branches the legs touched the heads of other trees beneath, and more like monkeys than human beings, dirty and soaked, we reached the yellowish-brown bogs in the valley. We found a dry hillock with a nice carpet of diddledee (*Empetrum rubrum*), and spread out our sleeping-bags there.

The night was chilly, but we awoke to another fine day, and porridge and coffee soon put new life into us. The way was always more or less wretched; several streams with ice-cold water were crossed without ceremony: we emptied our boots, wrung our socks out, put them on again, and were all right. Some stretches were covered by tall forests of "roble" (down here *Nothofagus pumilio*). Several times we crossed the Rio Betbeder, making use of fallen trunks as natural bridges. By-and-by we climbed upwards with the valley, and soon beheld a beautiful mountain, called by us Cerro Svea; most interesting as differing widely in geological features from the surrounding country. The river disappeared in a deep gorge, but we struck it again, and were able to follow it with the eyes up to a glacier with beautiful edge moraines on Mount Svea, whence most of the water comes. We crossed the river for the last time, worked our way through the belt of brushwood,

and found an open space big enough for our bags and comparatively dry. As we had three hours left before nightfall, Quensel and I at once climbed the ridge behind us in order to look for the pass. Being hard up for meat, we had brought the Winchester, and came across a small herd of guanacos at a height of about 2500 feet. They were too far off, and we started to stalk them; perhaps we should have been successful had not the mountain-fog, thick and impenetrable, come down upon us, and with it a snowstorm. From a crest at about 3300 feet we saw the herd hurry away down towards the valley on the other side of the pass. But we had also seen something else before the foggy wall shut out everything round us. Beneath our feet stretched an unknown valley, red, brown, and yellow like the Betbeder valley, and in numerous serpentines a river wound through the peat-bogs, coming from the glaciers on the south side of Mount Svea, while in a side valley we perceived a small mountain lake that discharged into the river. Then the curtain fell; violent snow-squalls forced us to return, and, groping in the *débris*, half blind with the snow, we came down to the fire with the night. Snow continued to fall, but supper tasted better than ever, and the flakes quickly melted in the hot cocoa. Later the sky cleared, Cross and Centaur glittered. "We'll have a dry night," we said, and crept into the bags.

It was a strange awakening. Certainly I had felt, half asleep, that the bag was growing heavier and that water was trickling in from the "pillow" (my coat and trousers), but I shook off the snow, pulled the hood

The Betbeder Valley.

Mount Svea, with Glacier and Moraines.

tighter round my head and slept again. I jumped up on hearing Pagels' "Aber, Herr Doktor," and looked round. The landscape had changed. Certainly Mount Svea had been white and glistening before, but now—here was winter. All round us everything was white and clean. The sleeping-bag was covered two inches deep, more or less, our boots had disappeared, our clothes were soaked. It was not especially agreeable to put them on, but there was no help for it. The fire half dried us, and then we had breakfast.

The sky is blue, the sun is already melting the snow, no time must be lost. Pagels was sent to shoot a guanaco—Prince had not had anything to eat since we left Lake Fagnano. Quensel and I walked to the pass and down along the slopes of the new valley; the river we named Rio Rojas, after the admiral in Punta Arenas; it is the same river that discharges into Lake Acigami near the Beagle Channel. The new lake was named Laguna Löwenborg. Probably we were the first white men here. We have been told that in old times Indians used to cross the mountains from Azopardo to the Beagle Channel, but we do not know if this be true or not; if so, they would have used our pass, Paso de las Lagunas, as we call it. Its height above sea-level is about 2100 feet. It was a matter of some disappointment that we did not see the Beagle Channel. Pagels had followed the other side of the valley, climbed a peak, and saw from there two sheets of water. To judge from his description one of them was Yendagaia, the other the Beagle Channel itself. Moreover, he brought back the best pieces of two guanacos; and

Prince could hardly walk back to the camp, so much had he devoured!

The weather had changed once more. It did not snow, but rained hard instead; however, we resolved to stop one day more, provided that the sky was clear enough. The next day opened with mist and rain, so we could do nothing but return. It did not matter much that the rain poured down; we were as wet as we could possibly be, and only the interior of our sleeping-bags was still dry. It was not easy to find a dry spot for the night's camp, and still less easy to make a fire. But after an hour's work we had a nice blaze. It rained all night and all the next day, but we went on. The forest seemed denser than ever, the streams were swollen and rapid, and we felt it a relief to wade through the open bogs along Rio Betbeder down to the lake. In the camp everything was in perfect order. Halle was ready to undertake the proposed trip across the mountains north of Fagnano and down to Lake Deseado; and accompanied by Müller he set out over the lake to a suitable starting-place. Pagels and I were busy preparing for a boat-trip, and early on the 16th we loaded the cargo. When everything was on board, the rifle, provisions, sounding-lines, nets, sleeping-bags, &c., we had so little room left for ourselves that we had to sit very uncomfortably. From the shore we had seen some small islands; we set our course for them, and found them interesting enough, as they showed beautiful traces of the glacial age in the form of moraines, erratic blocks, and polished stones. The direction of the morainic ridges and the origin of the blocks showed

to a certainty that the ice had moved west-eastward here. Later in the day I found new proofs, and with regard to plant geography, a subject I desired to study more specially, I had a rare chance of following step by step the gradual change of evergreen into deciduous forest. At 3 P.M. we passed the remnants of a cairn with a tripod of rough sticks on the top of it: we were now in Argentina! Now and then an inquisitive guanaco looked at us from the forest's edge, but soon withdrew, and flocks of screaming paroquets flew among the heads of the roble-trees. But no trace whatever of Ona Indians was to be seen. A small forest-clad island appeared to us a suitable camping-place, and at nightfall we landed with great care.

Good luck was almost necessary for us. Only for a few days in the month is Lake Fagnano calm; generally a fresh westerly breeze keeps up a heavy sea. The lake is about fifty-six miles long, and we had now covered one-fourth of that distance. Another nice day and we should have done our work.

Through the canvas and blanket I heard a soft murmur —only a little breeze—and we breakfasted with strong hopes for a good day. But we were greatly deceived. The wind increased, and when we finished our meal there were already white crests on the billows. The sky promised a gale, but as we did not want to be idle we pulled across to the shore, where we strolled about along the beach. We returned at the last moment and got some water in before we reached our island. I had plenty of time to survey our position. Seldom was the impression of virgin ground so strong as here.

No guanacos ever come there; the grass is *never* grazed upon, but grows in enormous beds where one sinks down to the knees through piles of dry blades. Several plants that were quite familiar to me in other places here grew to a gigantic size and were hardly to be recognised. What a difference between this place and the Azopardo valley! We are in the zone of the *roble:* the dense, dark-green groves with the thick, water-soaked carpet of mosses and liverworts has disappeared; so has also "canelo," or Winter's bark, one of Flora's most beautiful children in the far south. The forest is dry, the green colours bright; dry is the moss-carpet, and out of the thick layer of fallen leaves slender forest herbs peep forth. Our island is a little paradise, but nevertheless we want to take leave of it as soon as possible. All day passed, and all night it blew hard enough to make the big trees wave and groan; in the morning the sea ran as heavy as before. The situation became still less pleasant. The next day we expected Halle back, and he could not reach the tents without a boat. Our provisions were almost finished, and we found nothing to shoot. We looked for berries, and found "calafate" (*Berberis buxifolia*) and "chaura" (*Pernettya mucronata*); we had also some biscuits left.

Suddenly the wind died away. It was already late, 5 P.M., but we did not linger a moment, loaded the boat and left the island. Our little nutshell quite disappeared in the troughs of the waves. We could not go further east—probably the next day would bring us a strong head-wind on our return. We crossed the lake and were just close to the northern shore when we caught

sight of a tiny column of smoke rising out of the forest—Indians, some of the last families still living the old life. However, we could not stop, but preferred to take advantage of the fine weather. The night was very dark; we made only one halt, at a place where Indians had had their camp long ago, as the guanaco bones gave evidence.

On our return we sounded and got our greatest depth. seventy fathoms, close to the island. A series of soundings show that the bottom slopes gradually to the east; the deepest part is probably west of the middle. Early in the morning we were back "home," where Quensel and Prince received us. Halle had not shown any sign of return, but his signal came later in the day, and Pagels was sent with the boat to fetch him. He had penetrated to the mountains north of Lake Deseado; no natives were seen, but otherwise he had had a bad time. The comparisons Müller made between Brazil and Tierra del Fuego were not in favour of the last-mentioned country.

We had reason to be contented that we were all back, for the same day a storm came on, the end of which we hardly saw. The last excursions were done with the rain pouring down. The *Huemul* was expected on the 25th, and three days earlier we struck camp. The cargo was, of course, not so large; no provisions were left; and, besides, Pagels undertook to pull the boat with some less fragile things down Rio Azopardo, in spite of the rapids. Quensel had to follow alongside the river and give Pagels a hand with the landings. The rest of us divided what was left of our equipment

and set out. I believe we never worked so hard before. I shall not try the reader's patience with another detailed description: let it be sufficient to remark that the bogs were frightful after the severe rainfalls, that we were often stuck, while a never-ceasing rain increased the weight of our load at every minute. Soaked to the skin and without the possibility of getting dry clothes, we reached the depot at Mascarello, and after a while Pagels and Quensel also came in. They had managed their business well enough; only once the boat had struck a rock in one of the rapids and filled with water, and some things belonging to the cargo were carried away for ever by the current. But Pagels reached the shore before the little craft sank. They told us that the boat was on the shore at the foot of a barranca, where it would be impossible to pull through the cañon, as the place must be described as really dangerous. As the barranca was very steep they could not carry the boat without help, so we all went to the river, and found the place so steep that we had to slide down to the water, grasping the roots of the trees or whatever else we could get hold of. We transported everything past the rapids, and managed to fix the boat behind some bushes that kept it from falling into the river, and the other things were hidden as well as we could hide them. But evidently we had not been careful enough, for when our "sailors" returned the following day they missed several things, amongst them all our supply of meat; clearly the foxes had been there and done good business.

Halle and I made no haste, but waited till the rain had ceased a little, packed our cargo, and waded through

the clay down the river. But there we stopped. Was this our old innocent Mascarello? A yellowish stream whirled along the stony, invisible bed! I tried to cross, but close to the shore the water reached high upon my thighs, so we could not venture with our heavy cargo in the rapid current. We waited a while, and divided the last piece of meat between us. Only a few handfuls of flour were left of the provisions, and I resolved to risk baking it in the frying-pan. I made proper dough with some baking-powder, greased the pan with the last dirty grease left, put a lid on, and covered it with hot cinders. We waited anxiously, but when I appeared with delicious bread my triumph was complete; it tasted excellent. In vain we surveyed the river down to its junction with Rio Azopardo; nowhere did we find a place where we could cross it, and we had to stop another night in our wet clothes. It rained all the time, but we were happy to get a cold morning, that made the water-level in these glacier streams sink rapidly. We crossed without delay, the rain ceased, and a fresh gale soon dried our clothes. We could hardly recognise our old place at Hope Bay. The forest was changed into a swamp, and the beautiful open space where we had pitched the tents was a lake; the taste of the water plainly showed that the sea too had penetrated hither during our absence. Luckily enough we had placed our depot above this unsuspected flood. We soon found a new place. Halle and I, who arrived first, at once set to work to pitch the tents, when suddenly a signal announced the arrival of the *Huemul*. The officers came ashore, anxious to get news;

we could not promise to be ready that same day, there being still things left in the depot at Mascarello.

Quensel and Pagels arrived with the boat. Müller, who had fallen behind, and, according to his custom, also got lost, finally appeared, and we were gathered round the fire occupied in devouring the delicacies left in the depot when a message came from the *Huemul* telling us that she had damaged her engines and wanted to repair. As Hope Bay is anything but sheltered, she had to leave us once more, but the captain promised to be back on the 26th. He went to Puerto Gomez. We were very glad to get another day, as the horses only came half-way to Mascarello, and for the rest the things left there had to be carried.

In due time the *Huemul* arrived. Well-known, dark clouds appeared on the sky, and made us hurry up as much as possible. The horses had to swim, and two of them came on board quite exhausted. And we did not embark without adventure. We were just on our way to the ship with a large, heavy boat, the cargo being so bulky that only two oars could be used, when suddenly a heavy squall came on. We were ten minutes off from the vessel, but were driven back in spite of our energetic efforts, and almost before we knew it we were among the breakers on the shore. We had no choice; we jumped into the water, passed the things along, and pulled up the boat. On board they grew anxious and blew the whistle, but we could do nothing but wait. At last we took an opportunity between two squalls; standing in the water to our waists we loaded the boat, got out of the heavy surf, and came on board. But we

were so delayed that we stopped the night where we were.

On March 27 we saluted Hope Bay and proceeded westward, but did not get out of the inlet. A head-wind and a heavy sea showed us that it would be too much for our poor horses, so we sought shelter once more in Puerto Gomez. Here a little scene happened that I often recall to memory and will not keep from my readers. In Punta Arenas the cabin-boy had smuggled on board some nasty stuff, I believe absinthe, which is strictly prohibited, and his friend the cook had got drunk. The captain tried and sentenced them without hesitation: they had to undress, and were thrown into the sea with a rope round the waist. In the ice-cold water they had an opportunity of repenting of their sins. This method was said to be as effective as it is simple.

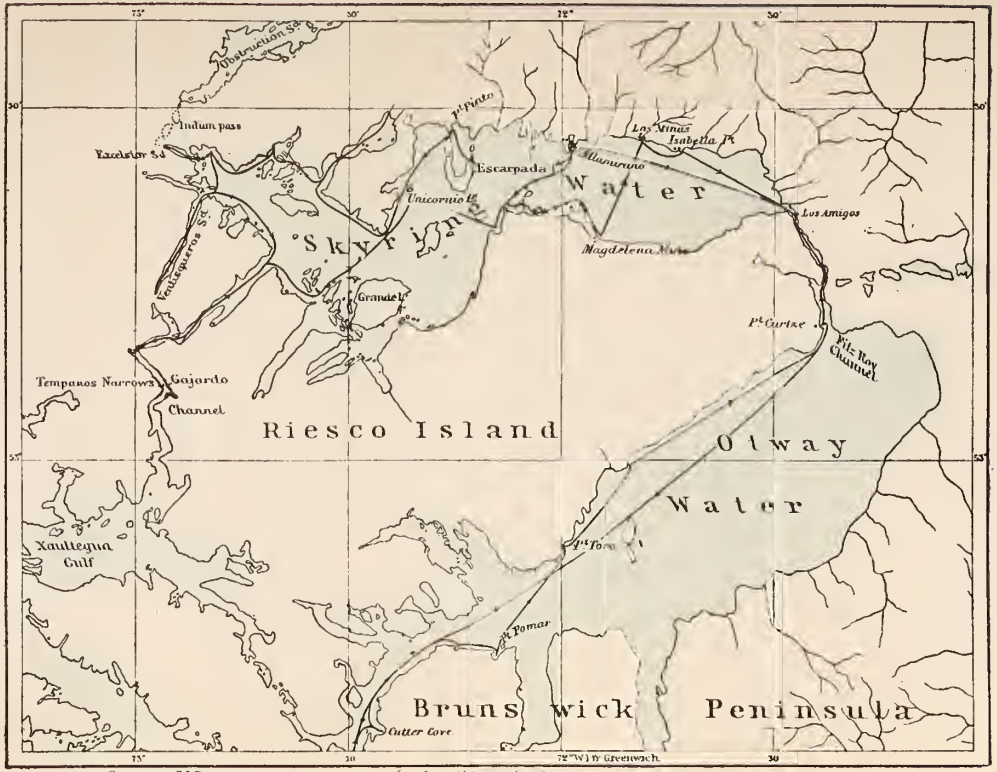
From Puerto Gomez we went straight to Punta Arenas, where we arrived on the 28th, and at once started to prepare for the next trip.

CHAPTER IV

OTWAY WATER AND SKYRING WATER

During the Swedish South Polar Expedition of 1901–1903 the question of surveying the great Otway and Skyring Waters also had been discussed, but we could not proceed further. At that time the inner part of Skyring was completely unknown, and, as it later became evident, a geographical discovery of great importance was in store. Already, before the outburst of the great Peruvian War (1879) the Chilean Government had started a survey, but the war put a stop to all work of that kind, and it happened that a long period elapsed before a new investigation was undertaken. Not until 1902 did we get news from Skyring. Then, however, Captain Ismael Gajardo discovered the channel later named in his honour, a channel which unites Skyring Water with a bay from the Magellan Straits, the Xaultegua Gulf. Thus the "white spot" began to disappear, and in 1905 the Government published a new Admiralty chart of Otway and Skyring. But many scientific problems awaited solution, and, as far as we could, we wanted to contribute towards it. I submitted a scheme to Admiral Rojas, and, having gained his approval, we prepared for the new excursion. We were to use the same vessel, the *Huemul*, commanded by L. Diaz Palacios, captain in the navy. We engaged Pagels for this trip also.

OTWAY AND SKYRING WATERS.



On April 11 we steamed out into the Straits. As a period of storm had prevailed for some days, we got a very heavy sea, which made the small ship roll in a most perilous manner; the clinometer indicated 33°, and I believe one seldom gets more. We remained on deck, enjoying the grand spectacle of a turbulent sea. At nightfall we reached the San Isidro Lighthouse, one of the very few down here. The morning was bright, and we weighed anchor early, but had not proceeded many miles before the storm recommenced. We could not venture to pass Cape Froward, but had to seek a harbour, where we stopped all day. Cape Froward, or Forward, is the southernmost point of the American continent. Here the heavy seas from the strait and from Magdalena Channel meet, and here, too, is the limit between the April weather of the east and the west's rainy mist, dense as a wall. The point also is of appropriate shape; it lies like a big clenched fist. Next day we rounded the cape and entered Jerome Channel, connecting Otway Water and the Straits. It is very grand scenery, and if you look at the west shore you will believe that you are in the Western Channels, with their high mountains, dark forest patches ending in snowfields, fine cascades, and waters, black and deep, close to the cliff.

Our first station was Cutter Cove, where several years ago was found copper ore in considerable quantities, to work which a company was formed. Here we got a good idea of a rather tragic chapter of Patagonian history. Prospectors and mining engineers, often without the slightest right to such a title, collected like flies

on a piece of sugar. Every day new people had mining claims granted to them; the deposits were described in glowing terms. At once people in America or Europe formed companies, sometimes with a big joint capital. The gold-fever raged, and it was taken for granted that immense riches *must* exist in Patagonia! Engines and machinery were bought, houses built, and then the end came. For as soon as work was started one or another disagreeable discovery was made: the quantity of ore was too small, the quality inferior, or the methods unsuitable; and the company failed! Speaking of claims, I cannot help telling the following story. When we went to Admiralty Inlet, and the newspapers in Punta Arenas reported the fact, a poor fellow who had once prospected for gold there laid claim to a big piece of land, evidently dreading that we should get sight of his sleeping millions. The day after our departure his claims were published. Heaven knows what he had not found in the way of valuable things down there, all carefully enumerated. We do not envy him, however, for there was absolutely nothing there to speak of.

After having visited some places on the south side of Otway Water, we crossed it in order to follow the north shore. The land here gradually rises towards the interior of Riesco Island; the slopes are clad with tall forests. In the south part it is covered by the evergreen trees that by-and-by are mingled with the light green roble (*Nothofagus pumilio*), which reigns alone for a short stretch. Where the water narrows to Fitzroy Channel the country once more changes its nature,

and we are on the edge of the Patagonian pampa, where groves of *N. antarctica* form a brushwood. Of course these changes depend upon the climatic conditions, especially the decreasing rainfall.

At several places we saw traces of habitation. In one little snug harbour, surrounded by a beautiful forest, full of screaming paroquets, and with the wild fuchsia (*F. magellanica*) still in bloom, was a small abandoned saw-mill; at another place we saw human beings, who fled as soon as they caught sight of us. They must have had some reason to hide, and probably the uniforms of our naval officers frightened them.

On April 16 we anchored at the entrance to Fitzroy Channel, connecting Otway and Skyring. It is a very narrow, shallow, and crooked passage, through which the tide rushes at a great speed. The passage entails innumerable changes of direction, soundings, and great caution. The shores are flat; we have entered the pampa zone, and find the outposts of civilisation on both sides. Los Amigos, where we had the doubtful pleasure of staying longer than we wished, can boast of two hotels, stores, an American bar, and a billiard saloon. We had some work to do there, as we made an interesting discovery of stratified clay from the glacial age, but when we were ready to leave, Skyring was not at all willing to welcome us, to judge from the south-westerly gale, which caused us to drag anchor more than once. We made an attempt to enter the open water, but encountered some heavy seas, that swept the whole vessel and led us to turn back. You must not forget that the *Huemul* only boasts 180 tons! Not

until the 22nd could we repeat the attempt. The waves still swept over the decks, but the north coast afforded some shelter, and we cast anchor in Puerto Altamirano. We had gone westward again and back to the forest. Here lives the pioneer who has penetrated furthest west, a Frenchman, M. Guyon, in his lonely block-house. Here he has lived several years with his wife and his children, some hundreds of sheep, some cows and hens. The house looked poor, but clean, and the mistress made some nice coffee and showed us all the kindness she could, insisted on our taking the last raspberries in the garden, and finally made us a present of a fine head of cauliflower. Happy, contented people! We pressed their hands warmly when we said "Good-night" to them and "Good-bye" to houses and people.

All traces of man have not disappeared, though they present themselves in a different way. It is a bright morning when we come pulling towards Isla Escarpada (*i.e.*, the Precipitous Island) to look for a place to land. And lo! the cliff opens, we glide into a charming cove, where the waves break softly on the fine white sand, and on the shore is a confusion of green Winter's bark, rich in foliage, and high-stemmed beeches, clothed with tiny mosses and thin, elegant hymenophyllums, thickets of fuchsia and large-fronded ferns. In this peaceful paradise stood the skeletons of two Indian huts; shells, bones of seals and birds proved that they had been inhabited not long ago. Could we only have called up the wretched brown figures, the picture would have been complete. This encounter with natives' work put us in a reflective mood: here was a Nature, still virgin,

with man as one of her numerous beings, not as the absolute master, and here we stood, members of the white race which makes all originality vanish under its hands.

The landscape in the west part of Skyring has a great deal in common with the famous Patagonian Channels. Everywhere long, narrow inlets penetrate far into the Cordilleras. Some of them are extremely beautiful and exhibit the true fiord-nature, with the entrance barred by a threshold and deep water inside; but the steamer cannot enter, and one has to pull in in small yawls. For the most part the scenery is perhaps more sombre than grand. Generally heavy clouds rest on the black, splintered crests, so heavy that even the ice-fields lose their whiteness; the reddish bogs and the deep, dark forest patches, which cling to the steep cliffs and get thicker and closer towards the sea, becoming a solid, impenetrable covering to everything down to the water itself, make a solemn impression. You hardly hear a bird sing or an insect hum. But even here Nature may smile; when the sun rises over precipitous summits, that stand clear against the sky, and paints the forest with light green bands and the snowfields with pink; or when the midday light is reflected with the splendour of diamonds from the glaciers, where caverns and cracks gleam with that magnificent blue colour, varying from deep cobalt to light ultramarine. Then you also notice all the more minute details in the forest, that you hardly pay any attention to when the rain is pouring down and fog is on the water. I do not speak as a botanist now, for I naturally found the forest

as interesting in the bad weather, and I had every reason to rejoice at the results of my studies in Skyring. The geologists also were contented; they got a natural section through the mountains, older layers appearing as one proceeds westwards.

We still hoped to meet Indians. In many places we found abandoned huts, but never the natives. We had heard of a passage made by Indians from Excelsior Inlet to Obstruction Sound, and spent a day visiting it. The inlet is barred and the ship had to stop outside. We found the way, but I shall tell of it in another connection.

Estero de los Ventisqueros, the Glacier Inlet, is one of the longest and most narrow, penetrating south-south-west far into the Muñoz Gamero Peninsula. Its innermost part was hardly known, which gave us a special reason for going there. The entrance is very narrow, and has the character of a rapid stream. Up it we forced our way between stones and heavy logs. The stream seemed to us somewhat strange, and we were not surprised to find the water in the inlet fresh, a lake having been formed where the tide played no part. Between imposing mountains, clad with snow and glaciers, we pulled towards the end, round a point that has shut off the interior, where was the gigantic glacier, stretching a tongue out into the water, which is full of ice. The ice-wall is about half a mile broad, and has a height of about 90 feet. We spent some hours here collecting, and late in the evening came back on board very pleased with our day and anxiously waiting for the next, when we were to make the acquaintance of Gajardo Channel.

The bottom of Ventisqueros Sound.

The outer part produced the same impression as the other inlets we had seen, but it gradually became very narrow, and finally no passage could be found. We had reached the place called Angostura de los Témpanos, or Icefloe Narrows, where even rowing-boats can hardly pass. Here the tidal current rushes through a narrow gorge over stones and reefs at a speed of up to eight knots. Heaps of ice from the surrounding glaciers are brought to and fro through the Narrows, and have given rise to its geographical name.

The *Huemul* anchored close to the cliff, a boat was lowered, and we set out to pull through; we had the tide against us, though not with its full force, and hardly got away from the spot in spite of eight men at the four oars. At great risk we got past the whirlpools round the shallow places. Excitement could be read in all faces, and with loud "hurrahs" we came out into calmer water. To our right a small inlet opened, and as we rounded the point the sight of the glacier in the background called forth renewed cheers. I think I have seen much ice in all shapes and forms, but hardly anything that made so strong an impression on me. In frozen cascades it comes through a narrow chasm, broadens out again, and protrudes into the green, transparent water with a tongue 100 feet high, crowned by millions of fantastic needles. Hardly a fleck on it, but what a play of bright colours—Prussian blue, ultramarine, and cobalt! In silence we rested on the oars, watching the sight. There was a narrow crevice in the rock at the edge of the ice where we could land; on one side we had the glacier, on the other the high ice-clad

cliff; huge pieces had fallen down where we now stood. As the place looked dangerous, we hurried on with our observations; now and again the big glacier discharged large pieces of ice, giving rise to a swell, that made our position uncomfortable. Quensel got specimens of the rocks. Halle and I found some Alpine plants that thrive at sea-level, refreshed by the cool breath from the icy surroundings.

We had just left when with thunder a large ice-block plunged down into the water, followed by a wave so great that an accident might easily have happened had we remained there; the place was swept by water and pieces of ice, and we had trouble enough to keep the boat clear from the rock where we landed to watch the imposing spectacle. As we did not want to stop with the ship near the Narrows, the anchorage being miserable, we resolved to go back. Pulling along the cliff, where a hanging glacier looked down on us from above, happily enough without paying us any other attention, we arrived at the critical place, and beheld a sight not particularly encouraging. Our calculations had failed; the current had turned and rushed full speed in the opposite direction, playing with the icefloes that were on their way to the other side of the pass. We tried, but were caught by a whirlpool, and were only saved by the efforts of the oarsmen from being crushed against the rocks. We crossed and landed on the east side, and climbed the rocks to look at the surroundings. On the other side it was not possible to get along, on this we could certainly pass if we kept at a height of 30 to 50 feet above the water; we should thus be able

to get down on the north side and signal to the ship. But the boat? We could not leave it there. We had almost made up our minds to wait five or six hours when Pagels made a suggestion: he thought it possible, though dangerous, to climb along the precipice, dragging the boat by the painter, which was rather long. Step by step we advanced. It was not easy to find foothold; the tiniest shelf was taken advantage of; our fingers grasped the smallest irregularities on the face of the high, precipitous cliff. The boat seemed to cling to every irregularity or projection; the current pressed it against the cliff with such force that some of us had to jump into it, cutting our fingers in trying to fend it off. We got past the worst rapids and gained a place where the mountain sloped gradually down to the water. Another critical moment: we all embarked, only Pagels, firmly squatted on his broad hams, pipe in mouth, still grasped the painter. Ready with the oars! Pagels swung the bow round, jumped into the boat, and at the same instant four oars dipped and strained against the current. The least carelessness and the boat would have been hurled back into the rapids again. A last effort, making the oarsmen drip with sweat in spite of the cold weather, and we were back on board.

It was too late to look for a new anchorage. We lay in a very disagreeable and rather unsafe place, the bottom being rock and the water deep close to the shore, where several shoals unexpectedly appeared. Now and then a strong puff of wind came from the high mountains, giving us a foretaste of the weather we should

get. We had hardly got on board when the ship went adrift; hastily we got sufficient pressure in the boilers to heave up and anchor again. There was not much repose on board that night. It was pitch-dark, the channel narrow, the current strong, and the shore dangerous. The captain had thrown himself on a sofa with his clothes on, and we were disturbed by heavy boots tramping over our heads, and every ten minutes soundings were taken in order to see if we were drifting. At 5 A.M. I heard the noise of heavy squalls, and noticed that the vessel trembled in a curious manner, as if she were aground. I fell asleep once more, but woke up with the engines working at full speed and the hull shaking terribly. I was right; we had dragged anchor and struck a flat rock, not more than 100 feet from the shore. With the engines alone we made no progress, but we tried a kedge with better result. Nothing serious had happened, and in the grey dawn we steamed out of Gajardo Channel.

A few words on the peculiar hydrographic and biological conditions in Skyring Water might be of some interest. As the narrow and shallow Fitzroy and Gajardo Channels are its only connection with other water, the tide is hardly noticeable, the difference being only some few inches. From glaciers and rivers volumes of fresh water are discharged into Skyring, and the result is brackish water. That the organic life is influenced thereby is evident: the plant life is different, seaweeds are miserable, no big kelp is found, and animal life is very poor.

In the central and east part of the large water several

The entrance of Excelsior Sound.

landings were left, and we crossed from north to south and *vice versâ* a number of times. The country further east has nothing of the wild beauty of the west, but is not less interesting. The tertiary layers were surveyed by Halle at two places, Mina Magdalena and Mina Marta. On the last-mentioned place you may see a Patagonian mining enterprise in its last stage—ruined houses, rusty machinery strewn all over the ground. The coal was no coal, which the "engineers" did not discover till everything was ready for a start, but lignite, whose value may be scientific, but hardly more. Halle found plenty of fossils.

When we came back to Los Amigos we wanted to make some additional excursions in Otway Water, but unhappily there is a telephone line to Punta Arenas, and the admiral requested us to return as soon as we could.

This made us pass Jerome Channel at night; the captain did not like it, but he had been asked to do it, if possible. We were not very pleased at returning so soon. It was a fine evening; we had crossed Otway Water, and the *Huemul* made its way along the coast of the Jerome Channel, where mountain and water merge into black darkness. We were approaching the outlet, when the engine suddenly stopped. The current is in our favour, thus giving us a moment's breathing-space. What's the matter? The engineer does not know; something has gone wrong; he cannot risk going any further. "But we shall drift ashore within a minute or two," the captain shouts; "we must continue." Again we try, very slowly; a noise of thunder is heard

from the big cylinder, as if the cap would burst. A conference is held. We cannot reach a safe harbour; the nearest is Arauz Bay, but the water is dirty there, and it is not sheltered from the prevailing wind. However, we try again, and being outside the harbour a yawl is sent ahead to make soundings, and by means of fire-signals the officer in it leads us to an anchorage.

The damage proved to be very serious. We had broken the shaft, and there could be no thought of repairing it here; all we could do was to keep it tight till we could reach Punta Arenas. Good luck had helped us hitherto—had it happened half an hour earlier we might have lost the ship—but we still wanted a good deal. The bay is open to the south-west. If a gale comes now, when our fires are out—what can we do? We *had* good luck; all the time the rare north wind blew! After working without a moment's stop for thirty hours the clever engineer declared all to be ready, and on the evening of May 4 we were back in Punta Arenas again.

CHAPTER V

THE PATAGONIAN CHANNELS

The scheme proposed for the next excursion was a cruise in the Patagonian Channels between the Magellan Straits and the Penas Gulf, during which we wanted to pay more particular attention to the natives. As Halle could expect little if any result from a trip in these parts, it was resolved that he should take up his work elsewhere and meet us in Ancud, on Chiloé, in the beginning of July. On May 9 he departed for Rio Grande, in Tierra del Fuego, whence he brought back fine collections of tertiary fossils. After his return to Punta Arenas he travelled on horseback along the Brunswick Peninsula to the place where Darwin long ago collected the first specimens of Magellan fossils.

Our expedition, however, got another member. On several occasions I had discussed the Channel trip with one of our new friends, Captain José Bordes, *piloto mayor* in the Chilean navy, and intimately acquainted with those parts and their population. He very much wanted to go with us, but could not, of course, simply leave his service, and he proposed that I should ask permission for him from the senior in command of the navy, Vice-Admiral Montt, in Valparaiso. The latter readily granted my request, and Bordes got a telegraphic order to take part in the expedition.

But at first it seemed difficult to get a suitable vessel. Admiral Rojas declared with a smile that the expedition had already accounted for one ship, viz., the *Huemul*, and besides she would have been too small and uncomfortable for an extended journey. Of the two other vessels stationed at Punta Arenas, one was of no use to us, but the other, the *Meteoro*, a twin-screw steamer of 650 tons, very well fulfilled our requirements. Unfortunately, she was bound for a run to San Felix Lighthouse, taking with her an engineer, sent by the Government to effect the preparatory work for the proposed Marconi installation between Valparaiso and Punta Arenas. All telegrams between the Magellan territories and the rest of Chile have to pass Argentina, an ordinary overland wire being an impossibility and a submarine cable being considered too expensive. After her return to Punta Arenas, the *Meteoro* had to visit the Evangelistas lighthouse, and thus it would be a long time before she could be at our disposal. Through the kindness of the authorities the difficulties were surmounted; I proposed that we should take part of the expedition to the Evangelistas rocks, and from there proceed directly to the Channels, and the Admiral assented. This was rather an advantage, for we won another station which we had never hoped for. Still one small difficulty remained: we wanted to get an interpreter, a Spanish-speaking Indian, but could not get one in Punta Arenas. We had to put off this quest, and Bordes told us he would try to persuade one or other of his Indian acquaintances in the Straits to come with us.

On May 21 we left the sunshine behind and once more disappeared in the rainy west. We anchored in Port Gallant, where Indians used to pass, selling their otter-skins to an Austrian, who lives there, and has done so for many years, with a native woman. Few Indians were there now, but amongst them was a middle-aged woman, who knew Bordes very well and had great confidence in him. At first she had strong apprehensions about coming with us, and it required all Bordes' eloquence to persuade her to take the decisive step on to the deck of the *Meteoro*. I now have the honour of introducing to my reader Mrs. Akichakwarrakwiltee—thus she calls herself. Her mission name, Emilia, is more handy, though not so euphonious. She became quite an indispensable assistant; she persuaded her countrymen to come on board, explaining that the instruments were not to torture them with, that we were no "Cristianos malos"—evil Christians—which words are inseparably associated in the mouth of a Channel Indian. Every evening I sat with her in the laboratory, she always crouching on one of the plant-presses, trying to teach me a little of her marvellous language, compared with which both Irish and Scotch appear quite civilized tongues. Unfortunately, her knowledge of Spanish was too superficial for grammatical studies, and I had to be very patient to make her understand. A great drawback was that in Spanish she always spoke of herself in the third person, as children often do.

It was funny enough to study her in her new surroundings. She came on board dressed in some queer rags

and with naked legs, and we could not help laughing when she walked about like a fine lady in a grey gown trimmed with red velvet, and a green cape, over which her black hair fell thick and wild. And in this dress she became a member of the Swedish Magellan Expedition. At first she did not seem very pleased with her new life, walked alone, silent, and almost ill-humoured, but we soon gained her confidence, and she gradually became more communicative. One night when, as usual, we were sitting up talking I wormed some of her story out of her. She had been caught by the missionaries and was brought to Dawson Island with her husband and children. She had three of them, one so big, one so big, and the third so—she measured with her hand above the deck—and "she was such a nice little girl," she added. But they lived in a "bad house"; all fell ill and died, and she was left alone. How she managed to get away from Dawson Island I do not know; anyhow I congratulated her. She did not want to go back.

The *Meteoro* heads west. More and more barren grows the landscape, more and more dwarfed the forest, colder the storm and fog. We have left the continuous coast and steam through the archipelago. Home, sweet home! Hundreds and thousands of islands, skerries, rocks, with a cluster of stunted trees on the lee side, smooth rocks with some grass where only sea-birds breed. We have left the untidy slate and have reached the granite zone, where the glacial epoch has created the same skerry-nature as in Sweden. The more we look the stronger grows the likeness; we

Our interpreter, Channels of Patagonia.

Two Channel Indians.

dream ourselves far away, the beeches become Scotch firs, the foreign sea-birds our common eiders and gulls. . . .

We made for a harbour in the offing. With Bordes on board we could make short cuts not marked in the charts, through interesting passages and narrow channels not exceeding 300 feet broad, and in some places so narrow that we almost touched the fringe of giant kelp (*Macrocystis*) on each side, and anchored in Puerto Cuarenta Dias, the Forty Days' Harbour—a name that holds a story: here a vessel is said to have waited forty days before it could approach the Evangelistas rocks. This perhaps is somewhat exaggerated—I dare not dispute it; anyhow, a week's waiting is not a rare occurrence. For us it was of the utmost importance to land on the rock without delay, otherwise the whole voyage through the channels might be a failure. No wonder that we watched the daybreak on May 26 with great anxiety. We had enjoyed light breezes from north and east, rare but all the more welcome for that, and calculated that subsequently the regular westerly swell—nothing less than the whole Pacific Ocean!—would have died down enough to make landing possible.

Rain and a grey, thick sky and a water like lead met us as we swung out through the last skerries and made for some black spots on the horizon. These are the famous Evangelistas rocks. Through the glasses the lighthouse can be seen. The motion of the sea is comparatively gentle, and the occasion seems to be favourable; however, it is no child's play to land there. We pass the black Pan de Azucar (Sugar-loaf), and the

Meteoro anchors in deep water between two high, black slate rocks, one of them crowned by a small lighthouse. We went with the first boat, steered by the steady hands of the boatswain over the soft switchback of swell towards the point of the rock that is honoured by the name of landing-place ; were it not for the name nobody would suspect it. The sea does not break there, but only plays with the boat. One moment we are lifted high up, the gunwale scratching the rock, the next the retiring wave bears the boat back deep down among the giant kelp-masses, now for a second laid bare like innumerable slimy serpents, that the capricious surf winds into graceful patterns. Right above our head rises a rough slate wall about 30 or 40 feet high, and some men stand on the top of it, waving their hands—presumably they are glad to see us. A rope hangs down in a long loop, by which means the boat is kept in place, and we are told to use it as we climb. Bordes is the first to try, old and used to it as he is. The main thing is to mind one's p's and q's : when a wave lifts the boat up to the cliff one must jump, without losing a second, on to a shelf two or three inches wide, slippery with green algæ—without the rope one could hardly keep one's footing. If you do not want the next wave to attack you in the rear you had better look lively, climbing and crawling with the assistance of projections and the rope : finally you are on safe ground and have "gone on shore" on Evangelistas. We had but one adventure. A young officer got a cold bath when he jumped, that was all.

The three lighthouse-keepers gave us a hearty welcome.

No wonder; a worse prison than theirs it is difficult to conceive. Even on a short visit like ours one feels a certain oppression, as of a prisoner behind a curtain waved by storm and rain. A high, for the most part quite barren, rock, steep on all sides; the vegetation a swampy moss-peat, giving way to the pressure of your feet; a small lighthouse, trembling in the frightful gales which give these parts of the world their bad reputation; day after day drowned in floods of rain mingled with the sprinkle of the breakers; many miles from the nearest shore, hundreds from civilization, from which a message is sent some few times every year, when (always with difficulties and often with dangers) provisions are landed—that is what life on Evangelistas is like! I should not advise anybody with a melancholy turn of mind to settle there.

It was interesting to find the slates again so far west—on very few places do they appear outside the granite zone. We had soon collected specimens of the poor, miserable, and scanty plants and animals, but it was long before all the stores had been landed. They were hoisted up with a derrick, worked by hand, and consequently so slow that people prefer the more hazardous ascent on their hands and knees. It is curious to think how the iron supports, not to speak of all the materials for the lighthouse, were ever landed. The story of the lighthouse would be worth a special chapter.

Sitting on a bag, we allowed ourselves to be lowered by the tiny wire down into the boat, that with great care was kept beneath us, 60 feet below—a quick as well as a comfortable manner of getting away from the island.

On board the captain was more anxious than ever. The winter days are short, the mist was not far off, and we must reach Cuarenta Dias before nightfall. When at 3 P.M. we weighed anchor the fog was already so dense that the islands were lost to sight within a few minutes. The water here in the offing is very dirty; we tried to make Cape King, but the current played us a trick and suddenly some nasty black needles loomed out of the thick veil on the port side; we were amidst the reefs—within the "danger-line." The course was changed; Bordes was persistent and we tried again; but night came on, and we were forced to spend it running to and fro in the entrance of the Magellan Straits, guided by the flashes from the wee lighthouse, that has saved more than one vessel from making nearer acquaintance with the ill-famed Cape Pillar.

The next day we could start our work in the Queen Adelaide group, where many detailed geographical observations are still waiting to be made. We visited Pacheco Island and went out by Anita Channel—just at the most difficult spot—when a fog, so thick and white that we could not see the rocks close at hand, descended over the water. Of course there is no danger of collision; nevertheless it caused some anxiety among the officers. The fog vanished as quickly as it had come, and we proceeded to Viel Channel, where for the first time we met the Indians in their natural state. They were very shy, and refused to come on board. We continued east, crossed Smyth Channel, and anchored in a harbour called Puerto Ramirez, on the Muñoz Gamero Peninsula, the only spot inhabited by white men between the

Straits and the Gulf of Penas. Several years ago, when Chile and Argentina were at odds with each other, the former country made a coaling-station here, and some sheds with coal are still left, guarded by two watchmen. Later on we had good reason to bless this coal-store.

By the last day of May we were again under way, steaming northward through the Channels. Few places in Patagonia are so famous as these Channels, where the steamer plunges between black, steep walls, crowned by snowy peaks reflected in the usually smooth water, where the open sea is never sighted, where one need not be afraid of storm or fog, when one has only to seek one of the numerous, charming little harbours. One can travel from 53° to 48°, a distance of 5°, without seeing the ocean! Where in the world is there anything like it? What a pity that sunshine and a clear sky are of rare occurrence; for days and weeks the rain does not cease, and a cold, wet fog rests over the water. The Channels have been compared with the Norwegian fiords. As far as the numerous inlets running east from the Channels into the mountains are concerned, I think that this comparison is obvious, even if we treat them from a geographical point of view. But in the outer appearance there is a big difference. In Patagonia Death seems to reign. The Channels are so silent; most of the sea-birds, such as gulls, Cape pigeons, albatrosses, and others that give life to the picture in the open sea have disappeared; so have the porpoises which play merrily round the bows; only some kelp-geese, ducks, or patovapores are still to be seen. But the forest is magnificent, in spite of the utter silence prevailing there.

My work took me there every day, and every night I returned on board with a fresh stock of experience and collections. Sometimes the beech—naturally always the evergreen one—leaves room for yellow and reddish swamps, where the only needle-tree of South Patagonia, *Libocedrus tetragona*, grows. People here call it the cypress. Large ferns with arboreous growth (*Blechnum magellanicum*) are noteworthy. As usual, flowers are rare, but there is one, the southern "copihue," *Philesia buxifolia*, which flowers also during midwinter, that with its large pink bells is almost unrivalled. To one thing the botanist has to accustom himself: to return every day as soaked as is the forest itself.

In the Sarmiento Channel, the continuation of Smyth Channel, we met several Indians; two canoes with their crews we took on board and brought to Puerto Bueno, where we stayed two days. Between Chatham and Hanover Islands, in a narrow place called Guia Narrows, we met another canoe; a naked girl angrily repeated "Cristiano malo," and the crew could not be persuaded to come on board. Probably they had been badly treated by some passing sailors.

The traffic in the Channels is very small nowadays. Almost all ships prefer to take the open sea, where they may steam day and night, which is hardly possible in the Channels, but one of the greatest pleasures on a cruise round South America is lost thereby.

At about 51° we noticed a certain change in the vegetation. New trees and bushes appeared, especially a curious needle-tree called *mañiú* (in this case *Podocarpus nubigena*), and beautiful climbing plants covered the trunks.

When passing Inocentes Channel one comes out into more open water, but only for a very short distance; soon the high walls close in on both sides again. Penguin Inlet was full of ice, and in Icy Reach we met innumerable small ice-floes, probably from Eyre Inlet, one of the unknown inlets on this coast. Not far from there, in Port Grappler, we came across the largest party of Indians we saw. They had probably had disagreeable experiences with white people—it is not uncommon for unscrupulous people to try to obtain their only valuable possession, the otter-skins, without giving them anything useful in return; they sometimes ill-treat them, seduce their women, or rob them of their children—but thanks to the energetic efforts of Emilia we got on rather friendly terms with them, giving them what we had of spare clothes, biscuits, tobacco, knives, matches, and other things highly appreciated by them. On June 7 we reached the English Narrows, a very narrow, S-shaped passage, where more than one vessel has struck. The masts of one were still to be seen. In the eighties a German expedition tried to find another passage—at that time the Kosmos steamers used to frequent the Channels—and discovered quite a system of channels west of the main track, but unfortunately they are interrupted by a place much worse still, where the open sea rolls in, and which is so shallow that breakers are often experienced, and one may have to wait several days for a chance of crossing. We intended to run this way on our return; now we proceeded further along the Messier Channel, and thus reached our destination, the Gulf of Penas. Towards the east a large system of

inlets, Baker Inlet with its branches, penetrating far into the mountains, opened, and there we turned in. For several days we had discussed the coal question, and as the captain argued that we should be unable to reach Punta Arenas we gave up the idea of going to the mouth of Rio Baker, with the greater regret as we were not far from it.

In terrible squalls we passed Troya Channel and turned westward, when we suddenly caught sight of a sailing-boat. We guessed it to be people from the Baker Company, a Chilean enterprise, which has the leasehold of large stretches round the river from the inlet to the Argentina frontier. Of course we stopped at once, took the crew on board, and towed their boat to a harbour.

Baker Inlet is a very wild-looking place. In consequence of its west-easterly direction the gales rush through it with unrestrained force, and the forest has been driven back into sheltered places, where the company has cut down the big trees. In the coves one can find scenery of charming beauty, where the slopes with woods, cascades, and snow-patches are reflected in the smooth, icy-green water. When one enters such a cove, coming from the windy barrenness of the channel, one gets the same feeling as coming into a warm, comfortable room from the snowstorm outside.

As we very much wanted to visit some of the channels outside the Wellington Islands, we crossed Messier Channel on June 12 and passed into Albatross Channel. Here every name on the chart indicates that it was given by sons of *das grosse Vaterland*. The weather was terrible, and we walked about wet and cold all day

long, but otherwise contented, as every day brought new features under our observation. On account of the poor store of coal we had to abandon our plan of going round Wellington Islands, but followed Fallos Channel only to the mouth of Adalbert Channel, through which we came to the Messier again. Again we passed the Narrows and took the shortest road through Chasm Reach, where the echo plays at ball between precipitous walls with the sound-waves from our whistle. One must not forget to look astern before the steamer changes its course, for high up the ice-clad summits on Wellington Island may be seen for a moment.

Still we had an important item of our programme left—the survey of Peel Inlet; and as I strongly insisted on it the captain had to yield, and promised to take some tons of coal on board in Muñoz Gamero, which he had refused to do before. But the probable reason was that he was in dread of every place not completely known, and walked about always suspecting danger. Had we not had Bordes with us, who was the real commander as soon as it was a question of some difficult enterprise, it is more than uncertain whether we should have been able to do much work. Certainly I could not force the commander to do anything he declared dangerous to the safety of the vessel he was in charge of, and as, unlike most naval officers, he did not take the slightest interest in scientific work, he took refuge behind his responsibility as often as he could.

Through Andrew Sound we went towards Pitt Channel. No harbour is known here, and on the chart one anchorage is marked, in eleven fathoms of water

at the most easterly of the Kentish Islands. In vain we looked for that anchorage; it was deep all round; and in spite of the approaching darkness we had to continue our course. We sounded close to the shore—sixty, forty, thirty fathoms; at last we anchored in nineteen fathoms, but then the distance to the rocks was only a hundred feet. We were completely without shelter, the anchorage was bad, and a squall would result in our dragging our anchors. Before daybreak we weighed and steamed through Pitt Channel into Peel Inlet. The *Huemul*, which was here once, had indicated a sand-bank on the place where the inlet branches. We passed with plenty of water. As we slowly glided into Peel Inlet and the last hiding-point lay behind us, we became silent, struck dumb by the scenery. Perhaps we never saw any more grand; it was quite wonderful. Furthest off, but nevertheless not very far, rise the high crests of the Andes, with fantastic needles and sharp-cut peaks, round which the continuous sheet of inland ice has folded its dazzling mantle. Four broad streams of ice emerge from it, embracing the violet-brown nunataks and joining in a gigantic glacier with a front nearly two miles broad, one single expanse of blue crevices and white crests. This all in a frame of ever-green forest and reflected in transparent, glossy water where the image now and then is blotted out by the ice-floes driven to and fro by the currents. Inland ice, Alps with eternal snow, all the details of a glacier, slopes and shores clad with a primeval forest, the crystalline fiord-water, the drifting ice, and all this embraced in one single glance! That *is* wonderful, I think.

We could the more enjoy the sight as we had discovered an unknown harbour not far off, suitable in every way. Quensel and I pulled through the ice, densely packed in certain places, to the glacier, and the officers started to make a map of the harbour, which we named Puerto Témpanos, *i.e.*, the Port of Icefloes, as owing to the tide the cove is filled with small pieces of ice twice a day.

We found ourselves in a world of ice, moraines, and muddy rivers, where we got on capitally, and did not return before dark, very pleased with the results, which included, amongst others, important observations of the geology in the High Cordillera. The next day broke calm and fine, but with a fog so thick that we could not see even the shore of our little cove. In the afternoon work could be continued round the harbour, which is fringed by a swampy forest of deciduous beech (*Nothofagus antarctica*). Fortunately we got another clear day. The last thing we did was to erect a tablet at the entrance of the harbour, with this inscription: "Meteoro. Comisión sueco-chilena. 16.VI.1908." I suppose it will be long before anybody finds it. As we came out, the old Channel weather met us again with rain and a gale of wind—but what did it matter? We had been successful with Peel Inlet and our spirits were high!

Silence now reigned in Puerto Bueno. The huts stood empty like grinning skeletons, their inhabitants gone on their everlasting wanderings. Further south we came across some more families, and the last were seen at Muñoz Gamero, where we made a short stay to

take fresh supplies of coal on board. In Smyth Channel we met two steamers, one of them evoking great excitement—the Norwegian ship *Alm*, chartered by a Punta Arenas firm to run between this place and Valparaiso. Halle was on board on his way to Chiloé, and we waved a farewell to each other.

Fresh wind and a heavy sea, Cape pigeons and stormy petrels met us when we came out into the Straits. Behind us lay the labyrinth, the wonderland where we should never return.

We had some places left to visit before we could consider the excursion finished. The lighthouse on Felix Island we visited on our way out, but stopped once more to bring the mail to Punta Arenas. From there we went to Woodsworth Bay to find a harbour. This place has been famous for its waterfall ever since the time of the *Beagle*. There is no lack of waterfalls in the Channels, as the rivers have no other resource but to flow vertically, but this was beyond all we had seen. Dancing from one narrow shelf to the next, from a height of nearly a thousand feet, the water hurls itself into the sea, and the whole length of the jet is visible at one time.

In Port Gallant we said good-bye to Emilia. I daresay she left us under the impression that not all "cristianos" are "malos." On a midwinter night the *Meteoro* anchored in the roads of Punta Arenas. We had no time to spare there; on the 29th we went on board a Kosmos steamer that took us to Corral, and there we immediately found another vessel bound for Ancud, the capital of Chiloé.

Peel Inlet, with great Glaciers.

CHAPTER VI

A DYING RACE

A KEEN wind whistles through the Channels, tears the stunted trees, and now and then flings a grey shower as a contribution to the yellowish bogs. On the tops of the mountains the winter snow shines against a leaden sky. Then Emilia presses her flat nose still flatter against the panes in the laboratory and says something which signifies "canoe." By means of the glasses we perceive a black spot far ahead—our first encounter with the Indians is at hand. Darwin once said that a naked savage in his own land is a sight never to be forgotten. It was not the first we had seen, but the impression was never so strong.

The canoe we now met was typical from every point of view. Half-naked, wild-looking figures are pulling out of time; in the stern an old woman steers. Everywhere amongst the queer luggage—sticks and poles of various shapes, old sealskins, piles of shells, and pieces of blubber—barking dogs peep forth, and in the smoke from the fire, always nursed in the middle of the boat, some rough-headed children appear. Now they have caught sight of Emilia, with their dark eyes wide open they quickly exchange ideas about this elegant lady who steps about on deck with such an assurance of demeanour. She was sent to negotiate. We were

under the impression that a whole sermon would be necessary to explain that we were not bad and did not want to rob them of their children; at least a long while elapsed before they could make up their minds to come on board. Not until now did we get an idea of the contents of a canoe! Out came a dozen persons—men, women, and children, the youngest carried on the back—accompanied by half a score of dogs. They look round shyly, but at the same time with much curiosity; some of them come on board after a certain hesitation. They refuse to leave their canoe alone, but one of them stops to keep an eye on us; certainly we are likely to steal the valuable contents. Only think of the delicious half-rotten whale-blubber!

Let us make nearer acquaintance with this peculiar race. Round the funnel, where it is warm, our guests have made themselves comfortable, squatting on their hams. Truly it is a funny assembly, and one is almost ready to ask if they really belong to the same species as we do. The face is round, the distance between the cheek-bones being remarkably great. The eyes have a dark and earnest expression, the nose is flat and broad, the mouth often monstrously large, with thick lips. The teeth of the younger members are white and beautiful; in the case of the older members one often finds the front teeth missing—they have gone in the process of one or other of the employments to which they have been put. The skin is of a dirty yellowish-brown colour, sometimes with a coppery tinge; the hair is very thick, coarse, and jet-black. It is worn hanging loose over the shoulders, a square-cut fringe

hiding the forehead. Both sexes show a remarkable disproportion between the upper body and the legs. The trunk is well developed, the neck short and thick, the shoulders straight, and the arms long and muscular. Often one finds real features of beauty, though the body is often disfigured by an all too prominent abdomen. Their worst point is thin, bent legs; want of exercise retards their development—the Indian lives in his canoe and by his fire; he is always sitting, and when he straightens his legs the skin folds over the kneecap. The men, who are generally without any trace of a beard, are mostly of finer stature than the women; they are considerably taller, their medium height reaching 5 feet 1 inch, against 4 feet 8 inches in the case of the women. The babies are rather lovely, with skin and hair of a lighter colour and with eyes of that deep blue which is often observed in kittens.

A visit to the camp gives us the best idea of Indian life. The beach is covered with shells. The canoes have been hauled up on thin logs. A few steps from the water, and we reach the huts, that harmonise so with the surrounding forest that one does not see them until one gets close. The forest gives shelter from at least one direction; on the rocks mussels grow large and fat, and outside in the cove one can gather sea-urchins.

The inhabitants have gathered in front of their wigwams to greet us. They were just "at table," an occupation much in favour during the daytime, or even at night. They have hastened to put on old garments, such as shawls, pieces of blankets, torn jerseys, &c., or even the original mantle of skins. This was once

the only garment worn—a square mantle of fur-seal or sea-otter, sometimes completed by a fig-leaf of the same material, kept in place by strings made from sinews. The head was always uncovered. With the visits of white men modern clothes have become more or less common; but there is hardly an Indian possessing a complete suit—one has a coat, another a pair of trousers, most of them have the legs quite naked. Some wear ornaments, necklaces of shells or on the breast a flat, polished piece of bone, fixed on a neatly plaited string. Without protests they let us enter the hut—some flexible sticks in a circle, bent together and fixed with a tough, grass-like plant (*Marsippospermum grandiflorum*). Hardly is the Indian able to stand upright under his roof, where the smoke from the fire, which is fed with fresh green branches of evergreen beech, may seek its way out at leisure. The wigwam is covered with grass, fern-leaves, twigs of trees, or with sea-lion skins and old pieces of clothes, all according to circumstances. The large skins are naturally much appreciated; they are never left behind on a camping-place, as are all the other materials used. The hut has one great advantage: it is easily constructed, and that is the main thing for a nomadic tribe. Once or twice we saw the skeleton of a hut brought along, which of course saved trouble.

We gladly "took a seat" with them and accepted their food. They have nice things to offer—large shellfish of various kinds, raw or roasted on the cinders, just as you like. Conversation is kept up with the aid of Emilia as interpreter: she is in her element, and appears to have forgotten all her new civilisation,

Indian Camp, Sarmiento Channel.

ready to jump in a canoe again with naked legs amongst dogs, dirt, and rubbish. The shells crackle, lips whisper. The natives have a phenomenal capacity for speaking without producing a sound. They look very earnest, their lips move quickly—nothing is heard. Suddenly the whole party starts to laugh heartily; it is evident that somebody has made a sally, and there is no doubt that we are the butt of their joke.

Mussels form the main part of their food. The big common *Mytilus* are simply plucked like fruit at low tide; the flat *Patella* is loosened with a short stick flattened like a chisel at one end. Sea-urchins are caught with a long stick, cleft in four parts at the end. But besides this they eat fish, meat, and blubber, or almost anything they can get hold of. Their weapons are very simple; the most important are the harpoons of bone, with one hook or with a long row of hooks like a saw fixed in a handle. There seems to be plenty of otter in the Channels; the skin is fine and valuable, and is the only object of barter available. Seal is not to be got every day, but one can live well on a big sea-lion for several days. And what delight when they come across a stranded whale! Feasts are held as long as anything eatable is left; from all directions the savages hasten up, eat till they are fit to burst, and pull away with loaded canoes. Several of the Indians we met had big quantities of whale-blubber. This does not contradict the fact that the Indian only lives for the day and never thinks of saving anything; he leads a wild life, with meat and blubber one day and nothing the next.

Bows and arrows seem to have fallen out of use, which is the more remarkable as nothing has replaced them. They are of the same shape as those used by the Onas, but smaller. The arrows are made of yellow berberis-wood, and have a neatly fashioned point of flint or glass; the quiver is of seal- or otter-skin. Slings are sometimes used to kill birds with, and the women are said to be clever in using them. Another weapon also is found, but we made its acquaintance only once. It was in Port Grappler. The natives had been on board, and had not shown themselves amiably disposed towards us. The next day we went on shore to see their camp. As we were on our way we saw the women and children hurry away from the huts along a narrow path that disappeared in the thick forest—such a retreat seems to have been constructed at every camping-place—and the men gathered in front of the houses threatening us with stones, sticks, and a kind of club, which at once awoke ou curiosity. They would not allow us to land before we had promised them to leave a shot-gun we brought behind in the yawl; Emilia had hard work to persuade them. At the same moment the clubs disappeared. In vain we asked them, in vain we looked all round; they only shook their heads, probably suspecting that we should deprive them of their arms and then assault them. It was only after a long parley and rich presents of biscuits and tobacco that one of them disappeared behind the hut and returned with a club, which he gave us. In comparison with its length (two feet) it is very heavy, and is made from the root of the tepú (*Tepualia stipularis*).

The Channel Indians live in families and have no idea of a community. Now and then some families keep together, probably those related to each other, as, for instance, two brothers with their wives and children. The largest party we saw, in Port Grappler, numbered thirty members, who listened to an old grey-haired rascal, whose objection to our anthropometrical instruments made him prohibit his subjects from visiting our laboratory. But, as we later found out, the different families here afterwards spread in various directions. As a rule, the canoe Indian has only one wife, but it may happen that a man with an old (how soon!) and ugly wife secures a younger one. Polygamy is connected with the position of the woman. She is subject to her husband's will, she does the hard work. Hour after hour, with her baby on her back, she sits pulling the boat in a tiring position; half a day she wades in the ice-cold water to fill the baskets with mussels. The household furniture is very plain: knives made from shells or stones, sinews, bone-prickers, all kept in round wooden boxes, and baskets plaited with a certain skill. How hard must it be in the circumstances to give birth to the children, rear them, and teach them to struggle for life with resources smaller, perhaps, than any other people on the earth possess! We seldom saw more than two or three children in a family; it is evident that mortality must be great among these naked little beings, who are dragged about with their parents in any kind of weather. Here, if ever one may study the survival of the fittest, he who stands the test when young should be able to stand anything. I do not

think they ever reach any great age. The only one that looked more than fifty was the above-mentioned *cacique* in Port Grappler. They have no idea whatever of their age. They do not count more than to three; any number above is much or many. We need not be astonished at their not getting old: in fact, they lead a life as hard as we can conceive. An existence in constant cold, in eternal rain, which makes it impossible to dry anything for weeks together, in icy water, in storms and frequent dangers, and, finally, the intercourse with white men, is not favourable to longevity.

That the dismal surroundings and the frightful struggle for existence should put their stamp on the mental life is easily understood. There rests a certain mournful melancholy over their souls; they are used to fearing the dangerous elements, and white men, more dangerous still. But, as true children of instinct, they forget all sorrows round the crackling fire; when they have plenty to eat their eyes sparkle, they have a merry time. Play seems to be foreign to them; not even the children play, but look earnest as old people, as if they could already behold all the terrors of the future in the dreary sky that lifts its vault above their land. I have not seen any ceremonies; probably they perform some, but refuse to before strangers. The Yahgan tribe was not without them. They have no religious ideas, they do not worship anything, but it is clear that they must fear powers of nature, which they cannot explain. They also seem to have some sort of idea that dead persons may hurt them; twice we saw natives carrying a small leather

pouch with hair from a dead person, and Emilia declared them to be amulets. Anyhow their owners parted with them for a match-box.

Life makes the Channel Indian a nomad. He moves along the shores all his life, year after year, from birth to death. However plain his canoe may look, it is a masterpiece, if we take into consideration that it is made with empty hands. Formerly the principal tool was the fire. A tree was burnt at the foot till it crashed down, the log was literally burnt down to a plank, and the charred wood gradually scraped off with big sharp-edged shells or stone knives. Now axes are used, but not every family has one. Then the plank is furnished with holes along the edges, as the canoe must be bound together. The construction is simple: one bottom board bent upwards in the bow and stern to form the broad stem and the stern-post, which protrude above the sides, made of two boards fixed to each other and to the bottom. They are drawn together with the tough bast of the cypress or the stem of a runner-plant (*Campsidium chilense*) and tightened with moss, fat, &c.; nevertheless the canoe makes a lot of water, and the scoop of sealskin is frequently needed. Some small sticks across the gunwales make the thwarts, and it is ready—the treasure, the family fortune. Now and then we saw oars of the primitive type, made in two pieces with the blade fixed with bast on to the handle, but those who are well off and possess a hatchet make them as we do. The oar to steer with is shorter than the rest, and is handled with great ability by the women. Often they travel into the open water; and the sea inside

the Channels may become heavy indeed for such a primitive craft, especially when, during a move from one camp to another, it is heavily loaded. Once we took two canoes on board, and the contents were emptied on the deck. In spite of the dreadful stench, Quensel and I made a list of the things contained in one of them: Three long oars, one short, handles for the harpoons, hatchet (modern), basket of bark for fresh water, two boxes with harpoon points, necklaces, sinews, prickers, &c., three small bags of sealskin with the same contents as the boxes, a bag of whale-hide with blubber, baskets, bailer of sealskin, a piece of slate to sharpen knives, bundles of bast, sea-lion skins, heaps of shells, pieces of blubber, various whalebones and baleens, bundles of *Marsippospermum* and a painter, plaited of that same plant.

Nowadays the Channel Indians are distributed from the Magellan Straits to the Gulf of Penas, over a distance of six degrees. Generally they keep inside, but sometimes travel out in the opening, and are said to use larger canoes for such journeys. We did not see any of this larger kind, but in Port Gallant found a third construction made from a single log. That sort is a product of late years. To the east the natives once travelled as far as Useless Bay and Magdalena Channel; opposite our camping-place in Admiralty Inlet we found the old huts. They are often seen in Last Hope Inlet, and sometimes in Skyring Water. As I have told above, we had heard of a road made by the natives from Obstruction Sound to Skyring, and we spent a day during our Skyring expedition in order to visit the

place. Our yawl passed the bar at the entrance of Excelsior Sound, and we soon reached its inner extremity, and seemed surrounded everywhere by a wall of rocks and green foliage. At first we looked in vain. There is no beach of sand or gravel; the water reaches the very peat and the roots of the trees, and it was a mere chance that we found the landing-place, so well is it hidden. The road follows a narrow gorge, where a vault of green leaves closes above one's head. It is four hundred yards long, and laid with short sticks across, with a distance of from three to six feet between them. At the other end we found a lagoon with fresh water, and from a hill we saw another lagoon separating us from Obstruction Sound. The sticks greatly facilitate the transport of the heavy canoes. What the Indians find to do in Skyring is not easy to tell. There are no shells or seals, and to judge from their old huts they carry provisions with them. Formerly they probably used to go there hunting guanacos, or more especially deer, and now perhaps to beg at the settlements. Several other passes, "portages" as they are sometimes called, are known in the Channels.

The Yahgan tribe, which inhabits Tierra del Fuego down to Cape Horn, and the remnants of which are collected on a small mission station, leads a life in every way corresponding to that of the Channel tribe. Their canoe, however, is of a very different type. This is not remarkable; much more so is it that their languages are entirely different, not one word being the same, or even anything similar. It was possible for me to discover this, but how explain the difference?

They cannot have had any great intercourse with each other, though they must have met, as no natural boundaries separate them. In the Patagonian Channels at least two different dialects are spoken; Emilia could not quite understand the Grappler people, but those in Smyth Channel spoke exactly as she did. The language can hardly be called beautiful. In the ears of a white man it sounds like a mixture of inarticulate, hoarse, and guttural sounds. The numerous consonants piled upon each other are characteristic, the peculiar sh and ch sounds, two kinds of r, and the impure vowels, which it is scarcely possible to pronounce. Their vocabulary is deficient in words for abstract things, but very rich in names of natural products, such as plants, animals, and even such as are of no use. Since their acquaintance with white people they have created many new words, such as for steamer, knife, matches, &c. We were surprised to know that they did not use the words for *man* and *woman* to indicate white people, but had made quite new names for them.

Thus they have lived for thousands of years, have been born, eaten mussels, endured hardships, and died. Soon no descendants will walk in their footsteps; they will all die out. With every year their small tribe melts. Perhaps a few hundreds are now left, but soon only the fragments of canoes and skeletons of wigwams will bear witness to them. They will die, but not because they have succumbed to a stronger race, which is able to gain wealth, unknown to them, from their land. When they have disappeared their vast land will remain deserted; it offers means of life for nobody

else. There we, the white men, are the weaker race. But why, then, are they condemned to extermination?

Well, why did the Yahgans disappear? Nobody hungered for their country—it was for the care of their souls. The mission gathered them, took them away from their huts and canoes, set them to read the Catechism and knit stockings. They languished and died. And in *this* case the difficult problem, how the white intruder should treat the savages, was simple enough: leave them alone; receive those who wish it, absorb them if possible, but do not transplant them roughly to a new soil. I believe there is a scheme to collect the rest of the Channel Indians into the mission stations. Well, in this case it will only hasten the inevitable end. It is dreadful to see how the white men who passed through the Channels and regarded the natives as strange animals, amusing to look at for a while, have been able to spread death and destruction among these innocent children of nature. Syphilis and phthisis especially ravage, and if we remember the influence of the first-mentioned disease on the offspring it is easy to tell the future result. The natives certainly have not the slightest idea of what a contagious disease is.

Perhaps all assistance would come too late now. But if I had the power I would erect a sort of central station where the poor fellows could come for a doctor and for other help, but without giving them a chance of a parasitic life of idleness. There is a small possibility that this peculiar tribe, one of the very lowest on earth, may be saved from total extermination. But who is the man to do it?

CHAPTER VII

CHILOÉ AND THE GULF OF CORCOVADO

In the year 1540 a Spanish navigator for the first time sighted the coast of Chiloé, but did not get very near the island. But though the discovery was not forgotten, it was thirteen years before the famous conqueror of Chile, Pedro de Valdivia, got an opportunity of sending another expedition. He sent Ulloa, who surveyed the coast with a couple of small craft, and discovered islands, harbours, and channels. The formal conquest dates from 1558, and, among many other events, is celebrated in Ercilla's famous epic, "La Araucana." The peaceful inhabitants met an evil fate. Without suspecting anything, they received the intruders kindly. But the Spaniards acted as they always did: the land was divided among the more prominent leaders, and the inhabitants made slaves. The island, which was before quite flourishing, and had a very ancient culture, and the population of which differed to its advantage from the martial Araucanians of the mainland in being very peaceful, soon ran to waste under the Spanish sway. The native race got commingled with the Spanish, and consequently grew poorer and more lazy; the intruders set bad examples and led vicious lives. Only one thing made rapid progress—the Catholic Church. According to a Chilean

author, there were already thirty-six churches on Chiloé in 1612. But the population diminished, the inhabitants fled out of the country. Chiloé became truly Spanish. During the wars of independence it remained faithful for a long time; it was the bulwark of the Spaniards, and only in January 1826, when the republic was already several years old, did the last royal troops surrender. Long afterwards the inhabitants, more than half of them pure Spaniards or *mestizos*, remained royalists, and Darwin relates that they complained of not having a king, but a president who did not take any notice of them. They may have been right then, and still Chiloé has the reputation of being a remote corner; I heard more than one Chileno speak with disdain of the Chilotes. Remarkably enough the education of the people, if we dare judge from the capacity to read and write, is better than in the rest of Chile, where the chances are the same. I think this speaks in favour of the poor Chilotes. Trade and industry are not maintained as they deserve to be, and the attempt to colonize with foreign peoples, Germans, Scandinavians, and others, has not yielded any results worth mentioning.

I believe the pure *huilliches* are easily counted now, but their language will always live in the sonorous names of many places. In some places it is still spoken. Their blood is in the veins of all Chilotes, and the type has much of the Indian in its appearance and is easily recognized. Nowhere in Chile does one find conditions so primitive or habits so simple as on Chiloé and the adjacent islands.

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A very beautiful landscape meets us as the steamer stands in for the glittering bay of Ancud. It is a day of bright sunshine. To our right we have the peninsula Lacuy, with its virgin forests, to our left the low beach of Carelmapu, and right ahead the Chacao Channel opens its winding passage. Straight south the forest has been cleared away, a patch of light green shows up, and we discern the white houses of Ancud.

As soon as we had anchored boats swarmed round us and dark-skinned Chilotes tried to drown each other's voices, offering us their treasures of delicious oysters and silvery fishes. All of them also were ready to make away with our luggage and with us too; several crews live by fleecing visitors who want to go on shore. We left in the steam-launch belonging to the captain of the port, who had sent it to fetch us, as well as our equipment. A considerable distance separated the steamer from the jetty, the bay being very shallow.

Ancud, the capital of the province, is a peculiar little town. It was founded in 1768 under the name of San Carlos de Ancud, and now numbers about 4000 inhabitants. I have seldom seen a place so absolutely lacking in any architectural beauty; most of the houses are low, wooden huts without a trace of style. The streets are rough and dirty, but fortunately not of the ordinary South American town plan—the chess-board—and crooked streets and small hills make a picturesque view. Round the harbour life is rather lively when the steamer is in; there are the business blocks, the small, ill-kept market-hall, the custom house,

Chilote House.

The Plaza in Ancud, Chiloé.

the port-master's quarters, &c. The place is crowded with bare-legged Chilotes on horseback or on foot, not without the inevitable *poncho*, sometimes bright and new, of a striped pattern, sometimes like a worn-out rag on which generations have rubbed their feet. Further up in the town the streets are often empty, and on the outskirts swarm pigs, fowl, cats, and dogs, which seem to flourish in the luxuriant grass.

Above I said something of the general education of the Chilotes. Ancud has several schools, some of them private ones, and can boast of a lyceum. Its rector and professors showed us great kindness and hospitality. They try to be as up-to-date in their teaching as possible, but high above all their endeavours the cathedral rises with mighty proportions commanding the whole community. It is not quite finished yet; the tower is wanting, and will cost much money. I dare say it is absurd to erect a church here (and not the only one!) big enough to hold the faithful in several towns of the size of Ancud. But the Catholic church, led by an energetic bishop, is rich and powerful; there is a Jesuit college and seminary, monastery and nunnery, and all the east coast is so crowded with chapels that sometimes one is able to count half a dozen at a time. Some of them are useful as beacons. The male inhabitants in general are not very pleased with the over-abundant influence of the priests, but here as everywhere the weaker sex encourages it. The only newspaper, *La cruz del sur*, is conducted by the priests; it appears once a week, and is free from all news. The only number I read contained a biography of the

Pope and a statistical account of Catholicism's conquest of the world; amongst others Sweden was rapidly returning to the only saving faith, according to this authority! The cathedral is situated at the *plaza*, where are found other more noteworthy edifices—the house of the *intendente* (governor of the province), the bishop's house, the fire-brigade, and the Jesuit college. With its broken and to some extent very original sculptures, its plantations full of weeds and its paths overgrown, the *plaza* gives the impression of decay.

Ancud has seen its best days. Those were when the devastation of the forests started, many years ago. Beautiful timber—alerce and cypress (*Fitzroya patagonia* and *Libocedrus tetragona*, two conifers), laurel (*Laurelia aromatica*), and luma (*Myrtus luma*)—was plentiful all round in the forest, the transport cost scarcely anything, ships came and went, the town prospered, there were wealthy men. This state of things did not last long; the coastal regions easy of access became exhausted, and it cost too much to draw profit from the interior, as means of communication were difficult. There is only one road worthy of the name, leading from Ancud to Castro, but it does not touch the central parts covered by impenetrable forests down to the west coast, where harbours are completely lacking and where the surf seldom permits a landing. Culture keeps to the north and east coasts, where the outlying islands act as a shelter and good harbours are frequent.

Before giving an account of our travels in these parts I wish to say some words by way of a brief description

of the Chilote and his life. We made his acquaintance long before that of his country, because several of the sailors on board the Government steamers in Punta Arenas were Chilotes. We had learnt to know the small plump men as enterprising, intelligent, and light-hearted. It is not uncommon to hear Chileans from the mainland speak with disrespect of the Chilotes, whom they accuse of stupidity and indolence, lethargy, and love of dirtiness; many hardly consider them as fellow creatures; in any case, they consider them inferior to themselves. And the Chilotes answer by not wanting to be styled *Chilenos*—they are Chilotes, and nothing more. I dare say it is quite as good. You must not judge them till you know the conditions under which they live. Chiloé is covered by impenetrable primeval forests and soaked by deluges of rains; the annual rainfall amounts to from 78 to 100 inches or even more. Cultivation has not been able to clear more than a narrow strip along the coast; the forest almost refuses to burn, and how cut it down and get it away when there are no roads? To make a road is much too laborious an enterprise for the private individual, and once made it demands continual expenditure or at once it is changed into a bottomless ditch of tough clay. And I believe the Chilote has one big fault: he has little ambition. If he has his bit of shore, where some wheat and his principal food, potatoes, grow, some small horses, cows, and sheep, then he is contented—more than that, he is a rich man. What is barely enough to maintain life upon he is able to gain with a minimum of work. The sea gives him plenty; at low tide he

gathers shellfish and sea-urchins, cochayuyo (*Durvillea*, a gigantic brown kelp), and luche (*Ulva*, a green alga), the oyster-banks provide a delicious dish, and there is any amount of fish. It is not at all surprising that he has little interest for agriculture. Modern methods are unknown to him; his plough is of pre-Columbian type. He boils his potatoes or roasts them, makes his soup of mutton or fowl, brews *chicha* from his small apples, and lives happy in the house of his ancestors. The roof is thatched and without a vent-hole for smoke, there is an earthen floor, and the windows often have no panes. Besides the members of the family, pigs are found within, and furniture is very scarce. Sometimes there is a separate cook-house of almost the shape of a round tent. Should the Chilote become ambitious or eager to save money, he seldom clears more ground to enlarge his estate, but leaves one element, the forest, and takes to the next, the sea. He is a born sailor; from childhood he has gone with his father in an open boat, made long journeys to look for fur-seals or valuable timber, especially alerce. He loves the sea, he travels all over the world, but is usually driven back to the old place, for his heart clings to the forest, the potatoes, and oysters of the big island of Chiloé.

It may be true that his character shows more than one defect, that he is too little ambitious, and often lives for the day without any higher aspirations; nevertheless a stranger who comes to his house is attracted by his kindly hospitality and childish mind, and, if he learns to know him in his proper element, cannot help admiring him. Who can match him in living in the

dismal forest for weeks or months, working hard, and getting up as soaked with rain as he goes to sleep, walking mile after mile over the most terrible ground, finding a foothold on slippery logs with a heavy load, cutting his way through the bamboo-thickets, or navigating the rapid, dangerous rivers? And all without other provisions than some *charqui* (dried meat) and *harina tostada* (coarse, roasted oatmeal).

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The first days of our stay we made short excursions round Ancud and to the Lacuy Peninsula, in order to get acquainted with the natural features, which were in many respects new to us. I shall not trouble the reader with a detailed account of them, merely giving a brief description of a ride to the west coast, the only time we saw the open ocean here. One can hardly speak of a road; one simply follows the shore from the town, if possible at low tide. At high tide one has to grope one's way in the water for some stretches, where glass-smooth rocks and hidden stones give horse and rider enough to think of. In one place progress is impossible; we strike off and follow a real road, winding across a steep hill down to the water again. From the top we had a splendid view over the bay, and forgot for one moment the miserable state of the road. It looks like a system of parallel ditches, where the mud reaches to the horse's knees; the furrows are so narrow that now and then he has to plant a hoof on the slippery wall to keep his balance, and if he tries to walk on the ridge between them he slides down every second minute, bespattering you all over with dirt. We were glad to

leave the hill behind, and galloped along the beach, where the rattling gravel flew whirling about the horses' hoofs. A dull rush sang in our ears—the Pacific Ocean thundered towards us, rolling in over sand-banks and rocks. Snow-white glittered the sand-beach; one wave after the other rolled in, was broken into foam, and died at our feet.

It was Sunday and fine weather, many people were out for a walk, and various figures looked into the little inn where we sat waiting for our dinner. The landlord, a young and very good-looking fellow, spoke Spanish with a French accent; his French wife promised to do her best—she could always offer us oysters, bread and butter, and a glass of Chilean wine. By mere chance we heard that their name was Dreyfus, and soon got to know that the husband's father, who lives in Ancud, was a cousin of the famous ex-prisoner of Devil's Island. Another of our fresh acquaintances, who sat at dinner with us, told us that his business was to hunt whale in the old-fashioned manner, only using rowing-boats and hand-harpoons. One does not very often find that method in use in this age of whaling-steamers and shell-cannons. But if there was traffic on the roads, the bay, generally crowded with oyster-fishers, was the more empty. The oysters are small, but very delicious, and for ten pesos you get a good bagful. Every month millions of them are exported to Valparaiso; on arrival there they are not so good, but certainly much more expensive. When I told a Chilote how much we pay for oysters in Sweden he shook his head, laughed, and put on a very doubtful air.

We returned by moonlight; it was low tide, and without any obstacle we could gallop along over the wet, glistening beach, and were soon back in our modest quarters.

It is a laborious matter to penetrate into the virgin interior of Chiloé. As we were anxious to see the primeval forest we were glad to accept an invitation to visit a settlement on Rio Pudeto; the owner was to take us there on his steam-launch. The day fixed for the excursion came with fine weather. Opposite Chiloé, on the other side of the Gulf of Corcovado, the coast lay absolutely clear, presenting one of the most beautiful pictures I ever beheld. High above the dark belt of forest the long row of giant volcanoes, Osorno, Calbuco, Huequi, Yate, Minchinmahuida, raise their snow-clad crowns. The landscape round the mouth of Pudeto is also worthy of attention. The entrance is about half a mile wide; the shores are muddy, and large herds of flamingoes walk solemnly round poking with their beaks after food; when we approach they take to flight all together, sail away like a pink cloud, and alight again with flapping wings, which flash black and crimson.

The tides reach far up the river several miles inland, and at the entrance there is a current of some knots. It was with a favouring tide and at the speed of a racer that we approached the low wooden bridge across the broad water. The space between the pillars is small, and without a warning our noble craft was thrown against one of them; the gunwale got stove in, and there we lay as though nailed to the pier. There was

no choice but to wait with patience till the current should turn. However, it is not so easy to be patient when one is half starved, and we had slipped away without any breakfast and carried no provisions. Not until the afternoon did we manage to get off, and steamed peacefully up the river, now a narrow channel of open water, winding between wide-stretching banks of reeds. In the twilight all details were soon obliterated, the sky glowed with the most beautiful colours, and a white fog settled down over the yellow swamps. It was pitch-dark when at last we groped our way to the half-built house, where a party of friendly grinning Chilotes took us in. Finally, at nine o'clock dinner was ready, but it consisted almost exclusively of potatoes. Never before in my life did I eat so much of this wholesome root. Chiloé and potatoes—these two ideas are indissolubly linked together in my mind. It is one of the native countries of *Solanum tuberosum*, and perhaps it is still possible to find wild specimens in the coast region. Large quantities are exported, and I daresay more than a hundred different varieties are cultivated on the island, each with a different name.

In a dark closet Halle and I got a bed each, but in spite of being tired we did not sleep much, for our bedfellows were far too numerous and too lively.

The next day we went into the forest. It was of the agreeable variety that one finds on sandy and comparatively dry soil. It was the middle of winter, but everything was fresh and green; nothing reminded us of death or rest; even flowers were to be seen. High above us the heads of the trees closed over, and a dull,

half-mysterious light filtered through the dense foliage. What a difference between this forest and the one in the Patagonian Channels! Variety instead of monotony, trees of very large dimensions and of many kinds hitherto unknown to me filling the air with strong aromatic scent. Ferns of all sizes and shapes clothe the trunks, a large *Rhodostachys bicolor* (*Bromeliacea*) sits high up on the branches, and thick-stemmed creepers climb towards the sky, where bright-coloured bunches of flowers peep out of green clusters. In the brushwood below several old friends reappear, but also new ones, *Berberis Darwinii* and other armed enemies of the explorer, large miniature forests of bamboo (*Chusquea colihue*), with yellowish-green, polished stems. Out in the open we find the *quila* (*Chusquea quila*), tough, rough, and prickly, but for all its disagreeable characteristics an important winter food for cattle. All was silent but for the song of some smaller birds. In vain we hoped that the pretty little *pudú*, the deer of Chiloé, would turn up. In old times guanaco and huemul are said to have lived here, but they must have disappeared long ago.

We returned overland to Ancud, following the highway from Castro. The ill-famed weather was still nice, and round the dirty huts children and a motley company of animals swarmed. Never a border, a flower in the window or a curtain, nowhere an effort at making the home comfortable. The Chilote does not seem to have any appreciation of things of that sort. The nearer we came to the town the more people we met on the road: bullock-carts of the characteristic type, with wheels of

one solid wooden block and a wooden shaft, toil their way slowly through the stiff clay; loaded with all sorts of parcels, an old woman comes riding on a small, shaggy horse; a white-bearded old fellow hobbles barefoot in the mud, tenderly embracing a bottle recently acquired in the town.

On our arrival we got important news: the Government steamer *Valdivia* was in! And smeared with clay high up on my thighs, and equipped in all the elegance characteristic of the tramp, I had to receive a visit from the commander, who presented himself to put the steamer at our disposal. In order to survey a larger stretch round the Corcovado Gulf we had asked the Government to help us; with the answer from Valparaiso in my hand I turned to Commodore R. Maldonado, well known for geographical explorations of the Chilean coasts. He was stationed in Puerto Montt, and had two steamers there for nautical surveying purposes. He answered immediately by sending us the *Valdivia*. The next morning, July 18, we steered out of the bay—by the way, a rather bad harbour—passed the whirlpools of Canal Chacao, and thence followed the west coast, where civilization has set its stamp everywhere. On the evening of the following day we arrived at Castro, and there we found the *Toro* before us. That was good luck, our first task being to find that steamer and go aboard her, because the *Valdivia* was not fit for the rather dangerous waters we were to visit. Our new steamer wanted a day to coal and provision, which gave us a good opportunity to have a look at the town, a title with which the place

THE FAMOUS CORCOVADO.

is honoured. Castro is, however, a historic place. Founded in 1567, it remained the capital of Chiloé until 1768, and has a big church and a convent to remind it of past, glorious days. Otherwise it makes a miserable impression, with its ruinous houses and wretched streets, where the wayfarer finds many dangerous pit-falls. I must recommend one of the night *cafés*. We entered on an earthen floor, sat down on a filthy bench by the traditional fire-pan, and a roughly used Chilote woman with a baby at the breast served us with some very doubtful, poisonous mixtures. Soon a rotund old woman came in, took a glass with us, and put life into the conversation. They knew, of course, who we were; gossip is not at all lacking in Castro.

Under the command of Captain J. E. Merino, the *Toro* left Castro on July 21, and after a short visit to Quellon we arrived at San Pedro Island, at the south-eastern corner of Chiloé. This place is not inhabited, but we found some Chilotes there busy cutting down big trees. Two of them came on board in the evening. The weather had been tolerably good, but showed signs of getting bad, and probably we should have stopped where we were, waiting till it had settled again, if the two Chilotes had not prophesied a fine day for our visit to the Isle of Huafo, far away out in the open sea.

It blew hard north when we left the cove and the rain poured down. Enormous waves rose high above the little steamer, which is smaller even than the *Huemul*; the wind increased, a fog came on, and after a short consultation we resolved to seek shelter in the only

place available, the Huapiquilan Islands. Not one of the officers had ever visited these remote islands, and I daresay the occasion to make their acquaintance was not very well chosen—had there been any choice!

Without adventure we managed to get in between them, and found the necessary shelter from the storm, that now raged with full force. The next morning we still had a gale of wind, but not so bad as the day before, and we resolved to try to reach Huafo. Instantly a heavy sea met us, and as soon as we lost the shelter of land we got as much as we could stand. It was a grand sight. We were half drowned in floods of water, and the port lifeboat was very nearly carried away by a tremendous wave. We had hard work to stand upright on deck, clinging to the irons of the bridge. The gunwales were under water all the time; a lot of things on deck broke loose and danced round with the eddying waters. When we reached Samuel Cove, the only—and hardly useful—berth on the island, the wind had increased still more; later we were told that the anemometer on the lighthouse had indicated 114 feet per sec. It was high time for us to get shelter; but do not think that for this reason we got a calm night! The small, open bay is full of shoals, and there is no room to swing; but with two anchors down and a thick hawser round some big trees on the shore we slept tolerably well in spite of the considerable motion. Next day the storm continued, and we landed in the surf at the mouth of a stream, along which we wanted to penetrate into the virgin forest.

Not very often have I seen such luxuriance in a temperate climate. Mosses appeared in incredible quantities, the ferns had stems of a man's height, bamboo surrounded us in all directions. The foliage glittered with moisture, the moss-carpet was like a swamp, and we soon became drenched to the skin. Showers of rain or hail completed the situation.

On board the crew had been collecting sea-urchins, and at dinner we made a feast off these delicacies, which are highly appreciated in Chile. In the alimentary canal of the sea-urchin a rather large parasitic crustacean often takes up its quarters, thus leading a most comfortable life. This animal is considered extremely delicious, and is eaten alive and kicking. I ate one once, but never again! It had a horrible taste, and besides was really unpleasant to have to do with, being about an inch and a half broad.

The following day the weather had settled somewhat; we resolved to try the lighthouse, which is situated high up on a precipitous cliff. We brought provisions and the mail, which were landed in a nasty surf. Outside the sea was still very heavy, and we anchored in a shallow bay, where the motion would allow us to have our luncheon. From the ship we got sight of some white spots moving along the beach; they were wild dogs of a kind that has lived on this island for centuries. They are about the size of a setter, have long hair, and are dirty white in colour. They are very shy. Probably they live on birds and their eggs, but are said also to eat shellfish.

It was already three o'clock before we could weigh

again in order to go back to Huapiquilan. The sky in the south-west looked threatening, but we hoped to get out, in spite of the big sea reducing our speed considerably. But before we had time to think the gale came rushing on, a raging wind with squalls of hail, wrapping us in an impenetrable haze. It was getting dark, the sky was black as soot, and with forced speed, as much as the boiler could stand, we made for the harbour. Then came a squall heavier than the rest, the *Toro* trembled under the frightful blow, giant hailstones whipped our face and made it hardly possible to keep our eyes open, darkness hid everything. Some thrilling seconds ensued. We were amidst the reefs—but the fog lifted for a moment, giving us time enough to rush through the narrow gap, the entrance to the berth. We were not five minutes too soon; night had overtaken us!

Between sunken rocks, over which the sea broke into pillars of foam, we headed for San Pedro again on July 27. I intended to make an excursion in the forest, and I made the captain and a young lieutenant come with me, promising them an experience that might prove new to them. I myself was prepared for whatever should come—for Darwin in his journals has erected an epitaph over San Pedro forest which is not likely to be misunderstood. We had to climb a very steep slope. The fallen trees do not decay very rapidly, but form immense barricades, especially round the numerous streams; as usual they are enveloped in a soaked moss-carpet, and mosses also hang down in long festoons from the branches and wash your face.

We seldom put our feet on the ground, but climbed like monkeys from one trunk to the next, balancing over the abyss. Deep down, as deep as 20 feet below, we caught sight of a muddy, reddish clay, with which we now and then had to make closer acquaintance as a log suddenly broke and we were sent down headlong, only to gain the lofty path once more by creeping and crawling on hands and knees. A hatchet was kept going cutting the innumerable creepers which caught arms and legs, and our perseverance was put to a protracted test. Frequent squalls enlivened our adventures. The poor lieutenant had to be left behind quite exhausted; we rested a few minutes and found new strength in some cold meat and a piece of bread, and then took up the battle again. After a strenuous climb on our hands and knees we gained a ridge, whence I had hoped to get a good view of the island, but alas! there was another valley in front of us, and behind it the next ridge. My comrades were not very anxious to go any further, but as I insisted on it they followed. The valley swallowed us up, and we reached the other side, and came out of the high forest and into a new kind of vegetation, that is called by the natives *tepual*, a tremendous hedge. Every time we came to a clear space we had to stop to breathe. On the top of this ridge were extensive swamps with scattered cypresses (*Libocedrus tetragona*) with the *tepú* (*Tepualia stipularis*). We had gained a height of 1600 feet, more or less, snow was falling thickly, and it was late enough to make us turn back. Half unrecognizable under the mud, with scratched faces and hands and our clothes

torn to rags, we reached the beach once more. The captain had hardly any trousers left—but certainly a naval officer's uniform was not made for the forest of San Pedro.

In order to cross the gulf we first had to visit Quellon to coal. There is a sawmill there, and the company's steamer was in. We found the captain to be a Swede, Mr. T. Landgren, who had also camped with Captain Merino on one of the Chilean men-of-war; he was one of the Swedes sent out at the request of the Chilean Government to serve as *pilotos* in the navy, which he had left to enter into private service. He was not a little astonished to meet countrymen here, and we rightly celebrated the occasion with a big dinner on board his vessel.

As Halle wanted to visit Queilen for geological investigations we also spent one day at that place. The small idyllic village, once called "the end of Christianity," has a large wooden church and a square *plaza*, where fat pigs had made themselves comfortable in the green grass.

The last day of July came bright and frosty, the air was clear, and we crossed the gulf, steaming for Mount Corcovado, "el famoso," as this old volcano is sometimes styled. Few summits are more imposing than this one, with its precipitous peak shining like snow-white enamel against the blue background. We wanted to land at the foot, but found this easier said than done. The beach falls off at a rather sharp angle and the surf is strong enough to play with the coarse shingle; in our little yawl we could not venture to approach. Fortu-

nately a small river flows out close by, and as the sea did not break on the barrier at its mouth we went in with a rush on a wave and stepped on shore. The *Toro* looked for an anchorage here, but did not find any, and we had to steam up to the entrance of the large Yelcho river, where there is good shelter behind an island. The place was inhabited, a company for a combined sawmill industry and colonization enterprise having its headquarters there.

At the river some years ago a Chilean surveying party had its station, and a road was said to follow the shore inland. Of course we wanted to make use of this, and started early the next day in the settled belief of being able to walk on a road. After a while we found it, broad enough for a bullock-cart—but the joy did not last long. A few hundred yards and the noble highway dwindled suddenly into a narrow path, from which only the worst obstacles had been removed! The forest is so swampy that one cannot walk there during the rainy season, and therefore the road is plastered with logs sometimes right across, when you jump from one to the next, sometimes longitudinally, amd then you have to balance—generally there is only *one* log. Some places were quite dreadful; the logs were gone, and we sank down knee-deep at once; others were transformed into bottomless lagoons where we had to stop to pick our way. But as the day passed we grew more skilful in keeping our balance than we had ever been in our lives before. At last the path disappeared in a bamboo thicket; probably nobody had been here for many years. We crawled through, found the path

again, and went down to the river, which is one of the largest in West Patagonia. We returned in the twilight with a good lot of botanical collections, took the last barricade, and came down to the colony.

From Yelcho we went to the beautiful Reñihue Fiord, and thence returned to Castro, where my comrades stopped in order to ride to Ancud; forced by circumstances, I returned there without delay, and despatched the *Toro*. Few of our excursions have left such agreeable memories as this one with the naval officers, who were always ready to render every service possible. We took farewell of them as of old friends, soon found but never forgotten. On August 10 we went on board the *Vestfold*, passing Ancud on the way to Valparaiso.

CHAPTER VIII

IN THE HEART OF CHILE

During the following weeks we got an opportunity of seeing quite new features of Chile. Hitherto we had almost exclusively travelled in parts where civilization had not reached or was quite new—the big island of Chiloé excepted; but the difference between the poor places there and the towns we now visited was certainly enormous.

The more important towns are generally situated on the coast or very near it, and sometimes so close that only a few hours' journey by steamer separates them. Most of them do not offer much of interest to a travelling European; they do not afford any historical memories or examples of art and architecture, and they are not the right places if one wishes to see Chilean customs. On board the *Vestfold* we passed several towns. Already elsewhere I have mentioned that we visited Valdivia, with its port, Corral. The last-named little town has a very picturesque situation, and can boast of some ruins of the Spanish fortress. Industry is beginning to flourish; a Norwegian whaling company has a station there, and a French syndicate was just building large electric furnaces to melt down the Chilean iron ores. Valdivia, situated at some distance from the coast, on the Calle-calle river, is a German town. Everywhere

you met German faces, German signboards and placards alongside the Spanish. There is a large German school, a church and various *Vereine*, large shoe-factories, and, of course, breweries. It gives an impression of a rapidly increasing community. After the great fire last year a large part of the town will be rebuilt on a much grander scale than before. But Valdivia is especially famous for its streets. Situated in one of the rainiest parts of Chile, surrounded by luxuriant forests, the town literally drips with moisture, and the streets have hardly passed the state of the forest soil. One can only cross at certain places, where wooden causeways are laid, and we saw the horses wade up to their bellies in the mud, the wheels of the carts almost disappearing.

In Coronel our expedition divided again. Halle was kindly taken care of by the Swedish Vice-Consul, Mr. G. Granfelt, and during the following weeks dedicated himself to a geological survey of the interesting coal-mines in the province of Arauco; he made his head-quarters in Coronel, Lota, and Lebu, and obtained very valuable results. Certainly all of us took the chance of visiting the famous park in Lota. This, as well as a part of the town itself and the coal-mines, are the property of the family Cousiño. Unfortunately, the park is not as well kept as it used to be, and is also spoilt by a palace with four façades in four different styles, and by dozens of spurious statues of a very suspiciously German origin. From Lota, Quensel and I went to Concepción, a larger town of pure European stamp, and from there by electric tramway to its port, Talcahuano, the naval port of

Valdivia.

Harbour at Valparaiso.

Chile, and the only good harbour north of Chiloé. There we went on board the *Vestfold* once more. On August 14 Valparaiso spread out over the narrow beach, and, climbing high up on the many hills behind, lay before us, and between the hundreds of steamers and sailing-vessels we were conducted to an anchorage.

The principal reason for our visit here was that we intended to make an excursion to the Juan Fernandez Islands, which we accomplished between August 20 and 31. We had prepared it long before, and Captain Löwenborg pleaded our case so well that Admiral Montt put at our disposal the large and comfortable transport vessel the *Casma*. Before the trip was undertaken, and also after our return, we found ample time to see both Valparaiso and Santiago, with their scientific institutes, and also to make a couple of longer excursions. In 1906, the year of the great earthquake, Valparaiso was on every one's tongue. Two years had elapsed since that tremendous catastrophe, but numerous traces were still left, especially as the authorities have seized the opportunity partly to re-plan the town, which somewhat delayed the rebuilding of waste streets. Everywhere, even in the blocks that had suffered but little, one could discover filled-up cracks in the walls. In Valparaiso several Swedes live, but only in Santiago could one speak of a real Swedish colony. It counts some very prominent members. I need only mention a couple of the most able officers in the army, Colonel Ekdahl and Lieutenant-Colonel Schönmeyr, or the director of gymnastics, Mr. J. Billing, late lieutenant in the Swedish army. The reception given to us by

our countrymen in Santiago will always remain one of the most agreeable memories of our journey.

Santiago is famous for its situation at the foot of the Andes. I daresay there is nothing in the world like its racecourse, with snowy peaks and crests many thousand feet high as decoration. I am afraid, however, that the fine view does not account for the enormous number of people there.

Nature in Central Chile is truly different from all we had seen before of that country. The climate is warm and dry, even on the coast; only in the valleys of the coast cordillera is there forest, formed by a number of fine trees, most of which I had not met with before. On the plateaus and ridges the reddish soil shines through, and with its peculiar plants, amongst them the large pillar-cactus (*Cereus*), it gives the impression of a semi-desert. One ought to see, as we did, these parts in springtime, when beautiful lilies, orchids, &c., adorn the earth. With the approach of summer they go to sleep.

Between Valparaiso and Santiago one passes one of the sources of wealth in Chile, the central valley between the two mountain ranges—vast prairies, thousands of cattle and large vineyards everywhere. Through the kindness of the Transandine Railway Company we visited the much-spoken-of tunnel joining Chile and Argentina, and at the same time a grand mountain district. The railway starts from the small town Los Andes. Here we have a typical Chilean country town, with low white, pink, or light blue buildings of one storey, mostly not very well kept, long brown earthen walls, broken

and picturesque—how well the flowering peach-trees stand out against the dark clay! The sun scorches, there are clouds of thick brown dust over the streets, covering the willows and their opening buds, marring the finery of the horsemen. It is *dia de fiesta*, the birthday of the Holy Virgin; dark-faced Don Juans, with trappings and enormous spurs of silver, embroidered leggings and many-coloured, homespun poncho, gallop towards the garlanded triumphal arches forming a walk up to the church. Evening steals upon Los Andes, life dozes off, only now and then the faint notes of a guitar reach us. The sun sinks, the mountains glow in the last beams, then the outlines fade away, snow-patches and bare rock melt together into a blue haze and darken to deep night. The moon rises, drowning the peach-blossom in floods of silver, everything dusty and ugly disappears in the soft lustre. But a strenuous day is in store for us, and we are forced regretfully to go to sleep.

The train winds up the valley of Aconcagua, lined with gay groves, adorned by many flowers; the river sinks deeper and deeper, the air grows thin, pure, and cool. The rack commences, higher and higher we rise. In Juncal our special train was stopped. The line was ready for another nine and a half miles, but as work was going on in two of the thirteen tunnels on this stretch we had to mount the mules kept in readiness for us. Besides the guide, Mr. Curtis, whom the company had sent with us, we got an additional member for our party, the police-sergeant in Juncal; the road was not considered safe just then, and the police wanted to be

at hand in case anything should happen. We rose in an eternal zigzag line; in all directions we enjoyed grand scenery, but Nature was still in the grip of winter. At some distance we passed Laguna del Inca, one of the most beautiful mountain lakes I ever saw, and late in the evening we arrived at the entrance of the tunnel, Caracoles, where we were invited to dinner by the English engineer; we had a merry time, and from the gramophone horn Melba and Caruso competed for our favour.

Each of us got on a pair of rubber boots and had a lamp to carry, and we splashed into the tunnel, where work was going on day and night, and where we got an idea of how a tunnel is made. The total length, 1·9 miles, was evidently not very considerable, but the loose quality of the rock made work very difficult. At the time of our visit a thick wall still separated the two republics; last year, however, the first train passed under the enormous mass of the Andes. We were glad to get out into the cold night air once more, and sit down and enjoy some whisky and a pipe of tobacco.

Life among the labourers and the scum of mankind seeking its way across the Uspallata pass is rather wild. A few weeks before our arrival eleven men left Caracoles to cross to the Argentine side. They never got there. They appeared, however, when the snow melted; for every spring, when the road across is put in order, the bodies of those who have disappeared during the winter are found, frozen to ice, partly robbed of their clothes, sometimes with the pockets turned inside out—murdered, robbed, and simply left. The soil of that

pass is literally soaked with the blood of the victims of assassins and highwaymen.

When traffic is open it is no risk for the railway passengers to cross. More than 30 feet of snow have been recorded near the pass, and during the winter the railway has not hitherto been used. Traffic had not begun, the road lay partly under snow and ice, but with a guide as excellent as ours we did not hesitate to cross. We had a splendid morning on September 10. The ground was frozen hard, the ice jingled like broken glass under the hoofs of our mules. With uncommon agility they passed the most dangerous places, of which there was no lack. The sergeant made a halt at a small stone house he wanted to inspect, took his carbine with the air of an official, and entered, but was soon back, there being no traces of the rascals he was looking for. The thin air made us feel a slight pressure across the temples, but otherwise it did not affect us. We reached the pass, *la cumbre*, on a height of 13,000 feet, thus having a good deal of our globe under our feet. Some few steps from us is the gigantic statue of Christ, erected as a monument to the eternal peace between the two republics, but not a living soul, not a blade of grass, only rock and snow.

With legs stiff, so that the loose sand whirled round them, our mules slide down the most westerly slopes of Argentina, and we reached Las Cuevas, the entrance to the tunnel on the Argentine side. From there we continued our ride and passed the valley where Aconcagua, hitherto regarded as the highest mountain in America, makes the background. Huascarán is now

said to compete for the honour, but as the proofs are not sufficient we took off our caps and bowed to his Alpine majesty. In Baño del Inca, where one has to cross the famous natural bridge, we tried the sulphur baths; no doubt we were the very first visitors that year. We turned round and slept in Las Cuevas, and the next morning Mr. Curtis and I crossed to Chile again, Quensel waiting till the next day. Our journey from Caracoles to Los Andes was rather original; with fine disdain for the train, we used a trolley. Down we went, sometimes at a breakneck speed, but the intense feeling of freedom made us forget the risk. The line for long stretches runs on narrow shelves, cut in the steep mountain-sides; derailment would mean instantaneous death. Further down we were very nearly run over by a train, and just had time to throw ourselves and the trolley off the rail. Situations rapidly change in this world: in the morning we experienced a temperature of several degrees below freezing-point on the high crests of the desolate Cordillera; at night that same day we were enjoying the tepid air between the park trees in a big city.

From another excursion to the coast at Zapallar, north of Valparaiso, I returned just in time to take part in the great national feast, from September 18 to 20, the anniversary of the Declaration of Independence, 1810. It is a real people's feast, celebrated with the same enthusiasm by all classes of society. Aristocracy has its processions, *Te Deum*, races, and military parades, the people dance *la cueca* and drink *chicha* in the parks all night long. I could not deny that the

air itself was really filled with a feeling of festivity, the whole country being decorated with banners of all colours, garlands, and triumphal arches, while on the railway the engines were adorned with green leaves, flowers, and flags, and everywhere were heard patriotic speeches and the playing of bands. And for three whole days no one who is not forced to does any work.

When Halle had finished his work he joined us in Santiago, and, using the great central railway, running longitudinally through the Valle Central, we went to Valdivia once more. In Corral we took a passenger steamer; it was the *Teno*, with a Swede, Mr. Boklund, as captain—another late *piloto*, who had left the navy after some years' service. Again we visited Ancud, said good-bye to all our friends there, took on board our equipment, and crossed the gulf to Puerto Montt, where we were now going to prepare the expedition overland through the whole of Patagonia.

CHAPTER IX

ROBINSON CRUSOE'S ISLAND

FAR out in the Pacific Ocean, 360 nautical miles west of Valparaiso, lies a small island, called Juan Fernandez, or Masatierra (*i.e.*, Nearer Land); another 96 miles further out we find a second rocky islet, bearing the name of Masafuera (= Further Away); and at the west end of Masatierra a much smaller islet, Santa Clara, rises out of the breakers. These three islands together form the Juan Fernandez group. From the first moment I got to know anything about the nature and plant-life of this highly remarkable place and saw a photograph of Masatierra, I had longed to go there—without any hope whatever of getting nearer to it than dreaming of that scientist's paradise. When, in 1907, I left Sweden on my second long journey I had not the slightest idea that one year later I should in fact land on Juan Fernandez. Through the valuable assistance of the Chilean authorities we had been able to save much time, new schemes arose, and the idea of being able to realize my dream of bygone days made my heart beat with expectation. Negotiations were opened, with the result already mentioned above.

The *Casma* was a good vessel of 4000 tons and very spacious; saloons and cabins were large and com-

fortable. Her commander was Captain F. Dublé, of the Chilean navy; we shall never forget his kindness and the courtesy of his officers.

At daybreak on August 22 a sailor came into my cabin to announce that Masatierra had been sighted. We came on the bridge in haste, anxious to behold the wonderland. At a distance it looked like any other wild, storm-beaten, rocky island, and I cannot say that this impression weakened as we approached. The sky-high peaks, the valleys with their precipitous slopes, the breakers rolling in on broken cliffs, everything gave an almost repulsive impression of desolation. However, it soon greatly modified as we came into the open harbour, Cumberland Bay, where bright green patches showed up on the slopes interspersed with patches of the naked red soil, where dark forests stretched high up in the valleys and over the ridges, and where a cluster of small wooden huts, here and there with a piece of garden, showed that here also the human race had found means of subsistence, perhaps of happiness.

We set our foot on the shore of a legendary island. Dear reader, do you remember how the wonderful fortunes and adventures of Robinson Crusoe interested you, when you were a small boy or girl and went to the infant school? Did you not dream that it rained drops "large as pigeon's eggs," or that you discovered on the sandy sea-shore those footprints making your blood curdle with terror? How the tale of Robinson excited the imagination at the same time that it taught us so many useful things!

Perhaps many of us would feel disappointment when landed on Robinson's island. Where is the tropical luxuriance, where are the parrots, monkeys, and tortoises, where the descendants of Friday's people? Well, certainly Defoe let fancy run away with him; he has adorned his island with all the richness of the tropics, and makes his hero land there under the most dramatic circumstances. But I myself did not think of the difference between truth and fiction; the former seemed to me wonderful enough, and I was seized by a feeling of pure joy when I thought that I was really here, walking about on that soil, and able to live through the favourite book of early childhood again.

Masatierra is a steep, rocky island, with an area of only 38 square miles. When you are down at the harbour the chances for excursions seem rather limited, for the slopes rise high and steep all round. In reality one stands on the bottom of an old volcano, surrounded by its semicircular wall, out of which some parts, such as the precipitous Pico Central and the Yunque (certainly deserving its name, "The Anvil"), rise more distinctly. The last one, with a height of 3040 feet, is the highest summit. Thanks to some narrow paths, running in zigzag, it is possible to get out of the crater and cross the ridges, and thus reach the bays on both sides. Many slopes, however, are not possible to climb, and the name of one of the crests, Salsipuedes, which means "try to get out if you can," reminds one of this.

The spot to which the stranger first makes his way is

Portezuelo de Villagra, a sharp gap in the southern ridge, where Robinson is said to have climbed to look out over the ocean. Following the dirty roads between the houses, we ascend slowly till we come to the many-coloured, steep slopes of volcanic tufas and the path disappears in a thicket of maqui. The maqui (*Aristotelia*) has been imported from the continent in late years, and this disagreeable tree is now spreading rapidly, threatening the original vegetation with annihilation. However, it does not reach very far, and we soon got rid of it. We now start to climb the steep mountain-wall, where the path winds along in a very sharp zigzag; one can sometimes jump down directly into one path from the next above it.

It is time to have a look at the peculiar natural features round us. From a botanical point of view Juan Fernandez is one of the world's most famous places. It is often the case that islands lying far away from the great continents exhibit a marvellous animal and plant life, containing genera and species not found elsewhere—endemic, as they are called; in this respect Juan Fernandez is perhaps only surpassed by the Sandwich Islands. About 65 per cent. of the total number of vascular plants (phanerogams and ferns) are confined to that small group of isles. It is as if one had been carried back to past geological periods, as if one walked about in a living museum, crowded with rare specimens. So many wonderful plants are brought together here on a small area that one must touch them to realize that one does not dream. Especially

worthy of attention are the small, sparingly branched trees with long, thin, more or less erect naked branches crowned by a rosette of large, thin leaves. For the most part they are members of the composite order, but other orders also have representatives. It is besides a remarkable fact that this type of organization is found also on other oceanic islands—the Canary Isles, for instance. The flora is without doubt very old, of a tertiary origin or older, and must have come from the South American continent, but for several reasons disappeared to a great extent on the mainland. The ice age cannot have had any influence of importance on Juan Fernandez.

In the narrow gorges (*quebradas*) that we pass there is a dense and impenetrable primeval forest. It looks black-green, thanks to the dark foliage of the endemic myrtle-tree, which we found in bud and flower in spite of the early date of our visit. Above the other trees rises the masterpiece of creation, *la chonta*, the endemic palm (*Juania australis*). It is impossible not to caress the smooth green stem as one tries to get a sight of its majestic head of large pinnate leaves. Glorious it is, a true *princeps* of the vegetable kingdom, noble from top to root. Unfortunately it is only too popular. It is persecuted with saw and hatchet, every ship brings away trunks and young plants, and it has already been exterminated from all places easy of access. The top is used as cabbage, the trunk is carved into beautiful walking-sticks, and the young plants are put in the gardens on the coast—in spite of the fact that we have sufficient proofs that the chonta cannot grow on the

mainland. In 1895 Professor Johow, of Santiago, the most prominent specialist in the flora, proposed to the authorities to protect the tree in question, and I was told that there exists a law on the subject. However, nobody seems to take any notice of such a trifle.

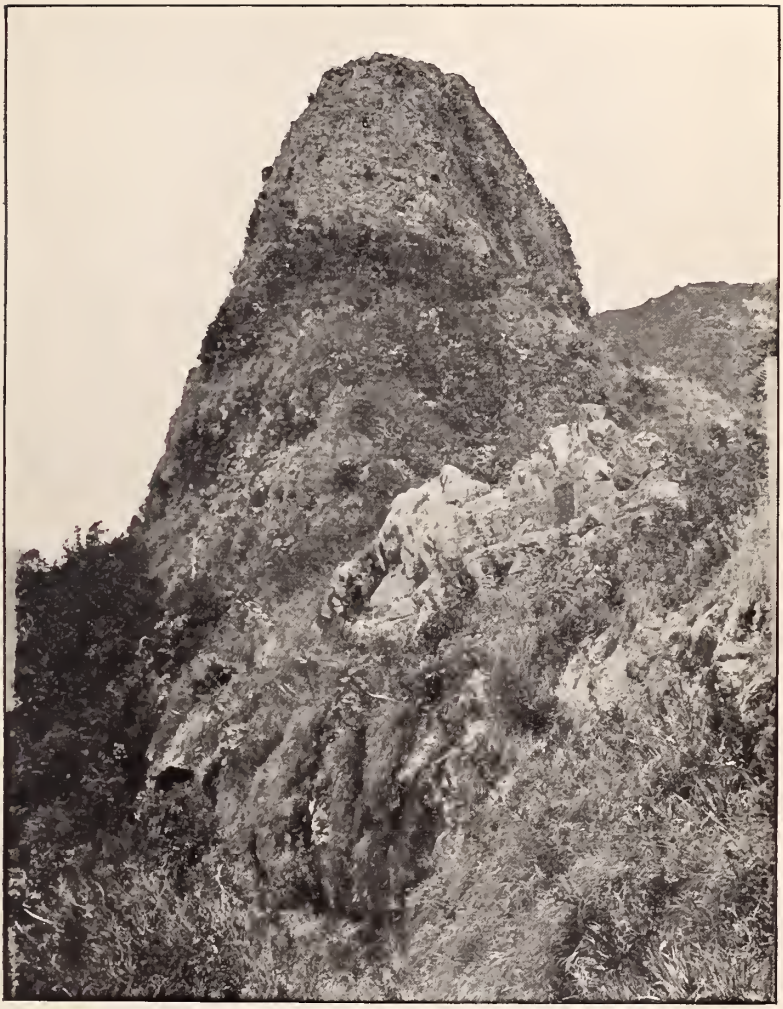
Creeping or winding plants are hardly met with, with the exception of a few ferns. Arboreous ferns, together with chonta and sandal-wood, have made the islands well known to non-scientists also. The fern flora is really very rich; there are all types of growth, from the mighty fern-trees, reminding one of mountain forests in the tropics, to the wonderful members of genera such as *Hymenophyllum* and *Trichomanes*, thin as tissue-paper, or the creeper species adorning the trunks of the trees. The ferns also, especially the arboreous, are the objects of a reckless war of extermination; and our fellow travellers on the *Casma* were not better than their predecessors, though I expostulated with them on the matter every day. It hurt me to see one boat-load after the other of precious plants taken on board the steamer, most of them only to be wasted.

We have arrived at the *portezuelo*, or Selkirk's Look-out, as this picturesque spot is sometimes called. The trees are very low, or have been replaced by strange shrubs mingled with the curious *pangue* (*Gunnera peltœta*), and forming a very entangled mass. On a vertical mountain-wall is the tablet erected in honour of the true Robinson, the Scotch sailor Alexander Selkirk. The inscription runs as follows:

In Memory of
ALEXANDER SELKIRK,
Mariner,
A native of Largo in the county of
Fife, Scotland.
Who lived on this island in com-
plete solitude, for four years
and four months.
He was landed from the Cinque
Ports galley, 96 tons, 16 guns, a.d.
1704, and was taken off in the
Duke, privateer, 12th Feb. 1709.
He died lieutenant of H.M.S. Wey-
mouth, a.d. 1723, aged 47 years.
This tablet is erected
near Selkirk's lookout by
Commodore Powell and the
officers of H.M.S. Topaze, a.d. 1868.

This is the historical basis of Defoe's work. It may look somewhat meagre, but one can understand that poor Selkirk had to work to preserve his life. What a mental trial, not to hear a word spoken by another, not to see a human soul for four years and four months! Thus his fate was pretty adventurous even if told without embellishment. On the other hand, he left his ship at his own request, discontented with the life on board. Besides, he might have chosen a worse place. The climate is very mild, it rains just enough, snow or frost is unknown. A few plants are edible, and the goats, which were much more numerous in Selkirk's time than they are now, provided him with fresh meat.

Through a walk lined with marvellous trees and precious ferns we pass the natural gate and are on the south side of the island. Down it goes, almost as precipitous as on the other side. We have a magnificent view of the coast and Santa Clara, where a tremendous surf roars. Soon we came out of the forest,



Robinson's lookout, with commemorative tablet.

and continued on to the barren slopes near the sea. The vegetation here is more like that of a steppe, with short grass and some heath-plants; only along the streams is there a bright green strip, a mosaic of gigantic pangue-leaves. And we bent the thick stalks at the side and drank to the health of Masatierra and Robinson and the whole world. There is only one way back, the way we had come; it was getting dark and we hurried on through showers of rain; large drops splashed on the heads of the rosette-trees, the soil emitted strong, peculiar scents. The last part of the way we slid down in the slippery clay.

Above I happened to mention the sandal-wood. The discovery of this kind of wood, famous since the days of Solomon, on Juan Fernandez most surely attracted notice. We have no reports of it previous to 1624, when, according to Burney, L'Heremite reported sandal-trees in great number. According to another authority ships used to visit the place as early as 1664 to bring the valuable wood to the coast, where it was highly appreciated. One did not think of preserving anything; a hundred years later it was hardly possible to find a living tree, and in the beginning of last century it was regarded as extinct. No botanist had ever seen the leaves or flowers. Suddenly F. Philippi in Santiago got some fresh twigs brought to him in 1888; he found them to belong to the genus *Santalum;* the species being new, it received the name of *S. fernandezianum.* The general interest in the tree was increased, but nobody told where the branches came from; a living tree was still unknown. Only in 1892 did Johow

get news of one; a colonist had found it in Puerto Ingles, high up in the valley. He was the first botanist who saw this plant. It is easily understood that I was anxious to become the second. How many people had looked for other specimens! All their efforts were fruitless; as far as we knew Johow's tree was the very last. If it were still there!

The man who brought Johow to the spot still lived, and after we had explained our purely scientific interest he promised to send his son with us. It would have been more than uncertain for us alone to look for a single tree in a valley clad with virgin forest.

It is possible to climb across the ridge that separates Cumberland Bay from the English Harbour, but we preferred to go there with a well-manned boat. The landing is, as in most places on the islands, performed with some risk; one must jump just at the right moment, and there has to be a good crew in the yawl, or the boat would be thrown on the rocks and capsized. Perhaps I ought to mention that the place in question only has the *name* of a harbour. We walked up the valley and made an ascent of the western side; the place is so steep that one is forced to grasp the trees and shrubs to get a foothold. Our guide stopped, looked round for a minute, down a few hundred yards, and we had reached our destination. The last sandal-tree. Absolutely the last descendant of *Santalum fernandezianum*. It is so queer to stand at the death-bed of a species; probably we were the last scientists who saw it living. We look at the old tree with a religious respect, touch the stem and the firm, dark green leaves—it is not only

an individual, it is a species that is dying. It cannot last very long. There is only one little branch left fresh and green; the others are dead. We cut a piece to get specimens of the peculiar red, strongly scented wood. A photo was taken, I made some observations on the place, and we said good-bye. Should I happen to go there once more I shall not see the sandal-tree ; it will be dead and its body cut up into prccious pieces —curiosities taken away by every stranger.

In the evening we gathered in the cavern near the shore, Robinson's Grotto, as it is generally called. Maybe that Selkirk slept here a couple of nights; we know that he did not take up his permanent quarters in this place. The officers from the *Casma* met us here, bringing some dinner for us. How excellent it tasted in the spirit of poetry lent by Robinson's Grotto, after what in my journals is entitled " the day of the sandal-tree " !

Early in the morning of August 26 we left Cumberland Bay, passed the magnificent coast cliffs, especially noteworthy at Cape Salinas, continued to the southwestern promontory of the island, and anchored in Bahia del Padre. All this coast is more or less difficult of approach, and only in fine weather can one effect a landing. We had enjoyed several days of calm, and were pretty sure of success. One of the colonists, a Frenchman, accompanied us, bringing with him a small flat-bottomed boat; without this a landing would not have been safe, as the water is very shallow close to the cliff, where one has to jump ashore. There is always a heavy surf. The excursion, as usual, was a miniature Alpine tour. Round the coast grow fine

seaweeds, and there was a rich animal life, so that the result of our work turned out very well. At nightfall we weighed anchor and made for Masafuera, finding ourselves outside Quebrada de las Casas, the only anchorage, at daybreak. Everybody on board looked forward to this visit with some excitement; the shore there is a steep slope, with large boulders and a heavy surf; several days may pass without a landing being possible, and in any case one must be prepared to get wet. We had very good luck.

The topography of Masafuera is more peculiar still than that of Masatierra. Its area is less—34 square miles—but the height is more than double, for the summit rises to 6500 feet. Its shape is that of a regular cone. The top is situated in the south-western quarter; the north-western is occupied by a plateau, 3000 to 4500 feet high. Towards the east a series of narrow gorges radiate like the ribs of a fan, of which Quebrada de las Casas is the largest and the only one inhabited. From our beach we had seen some houses; we did not take any notice of them, but started to climb the mountain-side without delay. After having crossed several forest-clad ravines, we found ourselves on the plateau; the forest does not extend so far. Quensel had brought his Winchester, and soon got a chance to shoot a fine buck. Wild goats were numerous here.

The most common tree here is a kind of myrtle; it only grows on this island, and here takes the place of the myrtle of Masatierra. We thus found the same state of things as Darwin so splendidly described on the Galapagos Islands. The vegetation above the forest

View from top of Masafuera, showing canyons.

Robinson's Grotto.

is of a very remarkable appearance—ferns and more ferns everywhere, groves of fern-trees, and a carpet of smaller species.

We had crossed the island and stood above the precipice. In the most breakneck places goats climb with ease, leaving man behind. Below our feet is a bank of clouds hiding the sea ; only the roar from the breakers reaches us. Suddenly the veil is torn asunder by a puff of wind, and then, right below—the depth of the abyss is 4000 feet—lies the ocean. Through the rents in the clouds we can see the white foam dancing in across a sandbank, where some wreckage shows the fate of a vessel that came too close. It is a striking sight of Nature's greatness, that stirs the soul and is engraved for ever in the memory. Time and place are forgotten; but the sun sinks and it becomes necessary to return to our ship.

As the weather continued good the *Casma* could stop without risk—the place is open to all winds—and I spent the next day making excursions in two of the gorges, and Quensel walked round the island to the west coast. The valleys are truly most remarkable, cut deep down 300 to 600 feet, and perhaps not more than 30 to 50 feet broad in the inner part, with sheer walls, sometimes nearly parallel. One walks in a natural alley, high above is a strip of the sky, and the subdued light illuminates the green carpet on the rocky walls. Here and there a tree is rooted in a cleft, but unfortunately frustrates every attempt to get a specimen; large rosettes of light green pangue gleam on the narrow shelves ; the stream, nearly filling up the bottom

of the valley, chatters merrily, now and then forming a miniature waterfall. Yesterday we saw the grand, to-day the pretty side of Masafuera scenery. Over the desolate expanse eagles soar looking for prey; down here the humming-birds shoot from flower to flower, flashing with metallic splendour as they twist and turn. Calmness and peace reign; not a breath of wind stirs the elegant runners of the ferns.

The next morning we were back in Cumberland Bay and made some short excursions; unfortunately we could not stop longer, but had to go back to Valparaiso. The voyage across causes much apprehension, as one can get a heavy sea broadside on, but we did not feel much of it. On August 31 we were back again after a most interesting trip, which also gave some very good results—among other things I discovered some plants on the top of Masafuera well known in the south of Chile, but not to be expected out here.

The Spanish navigator Juan Fernandez discovered the islands in 1563, and was their first colonist. As we have seen, it was not long before ships used to call for sandal-wood, and in the seventeenth century Spain erected a small fortress in order to shut out the numerous English buccaneers who had their headquarters in Cumberland Bay. An earthquake in 1751 brought the fort and the small town also built there to an untimely end. But the ruins are still left. Later the island was used as a penal settlement; near the harbour are some caverns where the prisoners lived. In our times the islands were opened to colonization. On Masatierra a number of families lived, and a fishing company had stations on both islands. Sheep, cattle, and horses

ran about, greatly to the damage of the vegetation. From an agricultural point of view Masafuera—and perhaps also Masatierra—is of no importance. For the development of Chile it is not of the slightest value that this strip of land should be cultivated. The fishing industry is of much greater account, especially the catching of lobsters. The giant Juan Fernandez lobster (*Palinurus frontalis*), sometimes from 2 to 3 feet long, does not live on the main coast of Chile, but is the more appreciated there. On the occasion of our visit it was worth sixty cents when delivered by the fishermen to the company; their agents get three pesos in Valparaiso, and when it reached the table of the big restaurants it fetched ten or even fifteen pesos for big specimens (at that time one peso was about eightpence). I daresay the fishing was not managed in a satisfactory way or it would have been a profitable industry ; we were told that the company was about to abandon the place. Because of the quite unnecessary colonization the future of Masatierra, as seen from a scientific point of view, looks very dark. But some time ago a still greater danger threatened Masafuera. During our visit to Chile the Government made preparations to establish another penal settlement on that island. An official commission had been sent there, looked at the place, and reported it as very fit for the purpose. Among the various descriptions of labour to be imposed on the prisoners forest-cutting was mentioned—the practically worthless, scientifically irreplaceable endemic trees would be exterminated in the most brutal manner ! The least one can demand, now that the prison is an accomplished fact, is that the members of that

commission should spend the rest of their lives on the island. Their sin is great enough to justify this.

It is evident that the preservation of natural beauty will appear a strange idea to a people like the Chileans, who first of all must think of the material development of their country, of the education of the people, and other important questions; they have not been able yet to give science the high place it occupies in the countries of the Old World. But in this case there is no time to lose. The Juan Fernandez Islands are of international interest; their destruction means irreparable loss to the whole realm of science. The order of the day ought to be: Away with the colonists! I can hardly imagine a more ideal place for a biological station than this—the queen of an ocean. And at the same time as plants and animals were being protected a profitable fishing industry could be established, many times surpassing in value agriculture or cattle-breeding. Several times I have pointed out these facts to the great public, but all in vain. I daresay a true Chilean does not know what love of Nature means. Perhaps he cannot help it, he was born like that; nevertheless it is a pity.

Since this was written I have had news from Chile that the penal settlement has not turned out very well and that the place is to be abandoned. But do not believe that the island will be left alone. There is another scheme: they are thinking of breeding sheep and cattle for the wants of the army—a most noble pasturage they will get. Is it possible? After what I have seen, anything is possible.

CHAPTER X

ACROSS THE ANDES INTO ARGENTINA

Before we undertook the journey to the Patagonian Channels we had resolved to move our field of work to a more northerly latitude during the rest of the winter, and I have already described the excursions made between July and September 1908. Naturally we had also discussed how we were to return south again, and the idea of proceeding overland—*i.e.*, going on horseback from Lake Nahuelhuapi to Punta Arenas—had also suggested itself. We did not conceal from ourselves that it would be a risky enterprise. When we left Sweden we were by no means prepared for such an eventuality, and therefore had not even studied what had been written describing that part of the country. This lack could in part be supplied, but not completely, and we did not miss any chance of getting information about Patagonia from persons who had personal experience. As to the equipment suitable, the way of arranging a caravan, and the technical side of the matter, Quensel had gained very useful experience from his strenuous summer round Payne and Lake Argentino. The financial difficulty was the worst to get over. We were told we could not start with less than fifty horses—and I daresay this was no exaggeration from a South American point of view. But we could not dream of

any such number; our money would not permit of our buying more than ten or twelve altogether. Anyhow, we made up our minds to risk it, hoping that by marching at moderate speed and resting the horses every third or fourth day we should manage with the smaller number. By the kindness of the Argentine and Chilean Governments, we had received complete sets of the maps of the Boundary Commission, and had had ample time to study them in all details. Unlike our predecessors, we regarded guides as unnecessary; with a map and a good compass one should certainly be able to get along everywhere, letting common sense determine the details of the march. In general, fixed, scientific ideas must lead us, and the usefulness of *vaqueanos*, guides, who can never read a map, would most probably turn out to be illusory. On the other hand it was necessary to get hold of a good and strong all-round man to accompany us the whole time, as we did not want always to be tied by all the regular daily routine work. It is not easy here to light upon reliable people for such a purpose, and one ought not to take anybody into one's service without strong recommendations from trustworthy persons. When we left Punta Arenas we had told Pagels that we should perhaps send for him later on, and we never had cause to regret that at last we resolved to do so. I telegraphed to him to join our party in Puerto Montt or at Nahuelhuapi, and he declared himself willing to come.

Briefly our plan ran as follows: We were to cross the Perez-Rosales pass to Nahuelhuapi, and there complete our equipment, buy horses, &c. Our way at first

would lead along the mountain across the high pampas, then run between the main range and the mesetas, across the transandine valleys and close to the east end of the large lakes; on some of them boat excursions would be undertaken. Everywhere we would avail ourselves of all possible chances of penetrating westward into the mountains. Our scientific purpose was to gain a series of geological and phytogeographical observations along the mountains, as well as on some sections across them to the Pacific Ocean. Before I invite the reader to follow us across the frontier to the neighbouring republic, I shall make some few remarks on the more important surveys made in the interior of Patagonia.

The shipwreck of Camarga in the Magellan Straits in 1540, as well as the unhappy result of Sarmiento's colonizing enterprise in 1584, gave birth to all sorts of stories. It was said that survivors of these disasters had wandered into the interior of Patagonia, where they had found immense treasures and established a settlement, which by-and-by had developed into a flourishing city, mentioned in the tales as "la Ciudad de los Césares," the Town of the Emperors. No grounds whatever for such a supposition existed, but that, of course, did not hinder the place from becoming the chief attraction for a large number of expeditions, which tried to penetrate into the mysteries of Patagonia, and succeeded in doing so during the seventeenth and eighteenth centuries. Now and again a rumour cropped up of the enchanted city, where the natives had prohibited the white men from going back to their own countries, and even to-day there are ignorant people

who still believe it. I myself have met one fellow who was sure of the existence of such a city—and he was an educated man.

In 1621 Captain Flores de León started with an expedition from Calbuco (near Port Montt). He discovered the Perez-Rosales pass and reached Nahuelhuapi, where he encountered numerous savage Indians. And probably he is not the only one who made that journey at so early a date. Soon the Jesuit mission on Chiloé tried to effect communication with the east side of the Cordillera, and on one of his journeys Father Mascardi founded a station on the shore of Nahuelhuapi in 1670. Under changing fortunes it existed until 1717, when the Puelche Indians completely destroyed it.

Investigations now ceased for a time, but at the end of the eighteenth century we find new brave pioneers setting out, and in the south the first expedition penetrated far inland. Antonio de Viedma in 1782 marched from San Julián, on the Atlantic coast, across the pampas to the foot of the mountains, where he discovered the big lake now named after him. We must skip some years to find any dates worthy of mention in this brief summary. The glorious expeditions of the *Adventure* and the *Beagle*, well known to all English readers, opened a new era of modern scientific investigations, and Captain Fitzroy, accompanied by Charles Darwin, in 1834 pulled up the Santa Cruz river. From the point at which they were forced to return they beheld the depression where Lake Argentino is situated; but not until 1867 was this big lake discovered by the English engineer H. Gardiner.

R. A. Philippi, C. Fonck, and others in the fifties started to explore the regions of Llanquihue and Nahuelhuapi, and in 1862 William Cox, an ancestor of the Swedo-Chilean family Schönmeyr, made a famous journey to Nahuelhuapi and went down the rapids of Rio Limay, till he got shipwrecked and was made prisoner by the Indians. We owe him a debt of gratitude for a great deal of information about the natives. Later Captain G. Musters made prolonged journeys through the land of the Tehuelches and rescued the knowledge of their habits and customs from oblivion. However, large "white patches" still remained along the foot of the Cordilleras.

The man who has gained the greatest merit for their exploration is Dr. F. P. Moreno, late director of the museum in La Plata. In my opinion his travels well match most of those made in our days, and if his name is not so well known in Europe the fault is ours, not his. In the years 1875 to 1880 he crossed Patagonia in all directions, often amidst great dangers; more than once he nearly lost his life. He and his companions were the first to reach Nahuelhuapi from the east; together with Moyano he discovered Rio de la Leona, the outlet of Lago Viedma in Lago Argentino, and also the great Lake San Martín. Later he became the leading spirit of the Argentine Boundary Commission, when a piece of geographical work almost without parallel was performed. In 1880 Moyano made an expedition from Santa Cruz along the valley of Rio Chico, and thence to the north, and he was the first white man who beheld the vast surface of Lake Buenos

Aires. Another prominent Argentine explorer was R. Lista.

Long before these important events, Argentina as well as Chile had begun to think of expansion, Argentina towards Patagonia, the cramped Chile through the transandine valleys out over the east slopes of the mountains. Thus a boundary dispute arose, carried on with great heat by both parties. It was deemed to have been brought to an end by the treaty of 1881, which settled that the Cordillera should constitute the boundary, and thus the ground for dispute seemed to be removed. Commissions were established to regulate the matter, but soon all negotiations were broken off; a new controversy had arisen. It was found that for long distances the water-parting did not coincide with the highest mountain-ridges, but lay east of it, and the Chileans considered that the water-divide ought to be the frontier, the Argentines that only the highest peaks and crests would make a just and natural boundary. The question was of great importance, as the dispute involved the fertile subandine valleys, which with every reason were considered a good field for future colonization. However, matters could not be settled as long as the region was not mapped, and in the nineties a fine piece of work was accomplished, in which several Scandinavians also took part as cartographers. The Argentine exploration resulted in a large work, accompanied by splendid photographs and numerous maps. We could see now how much was still left to be discovered: large lake-basins, such as Fontana-La Plata, Belgrano-Azara-Nansen, Pueyrredon (Cochrane)-

Posadas, the last one as late as in 1898. Sometimes naturalists also accompanied the expeditions. From the Chilean side efforts were made to start from the fiords on the Pacific coast and penetrate up the rivers through the mountains to the sources—enterprises associated with tremendous difficulties. Dr. Steffen, the well-known geographer, surveyed the river systems of Puelo-Manso, Palena-Carrenleufú, Cisnes, Aysen and Baker, Dr. Krüger those of Reñihue and the numerous lakes east of it, Yelcho-Futaleufú and Corcovado. The data having been gathered, the question was submitted to the award of King Edward VII., in order to prevent a terrible war. The King sent a commission under the command of Colonel Sir Thomas Holdich, and in November 1902 the decision was published and the boundary was settled. After this combined work was undertaken to erect the marks, new geographical results being gained. The Chilean Government published a work in several parts with numerous maps, and the keystone was laid in 1908, when the Argentine description of the demarcations appeared.

Private expeditions had also operated in Patagonia during this time. Dr. Hatcher with the Princeton University Expedition occupied himself in the interior of South Patagonia, discovered Rio Mayer, the outlet of the Belgrano system, and did important geological work. The geologists Hauthal and Roth made extensive surveys, the former principally in the southernmost part of the country, also visited by the Swedish expedition of 1896–97. In 1903 Mr. A. Thesleff, a Finnish gentleman, crossed Patagonia in order to look for land fit

for cultivation; with him went the Swedish botanist P. Dusén, who brought home large collections from the region between Santa Cruz and the lakes San Martín and Viedma. Many smaller journeys are worthy of notice, but I must confine myself to those already mentioned. There was still, however, a vast field for scientific work.

The winter was coming to an end. In the forests round Reloncaví the trees opened their flower-buds; in Puerto Montt we enjoyed the first real spring days. We were now more busy than ever, the question being to choose a complete but light equipment, and to pack the rest and the winter collections and send all together to Punta Arenas. Our modest resources were severely strained buying horse-gear, clothes, and a lot of small things.

The last nails were driven into the boxes, which were sent down to a shed to wait for the next steamer, and with a ridiculously small amount of luggage we started for Puerto Varas at the Lago Llanquihue on October 6. One is able to drive there very comfortably, for we had not yet said good-bye to civilization, and were ordinary passengers. A German-Chilean company, the leaders being Germans, called Compañía comercial y ganadera Chile-Argentina, owns land on both sides of the mountains, and has established regular traffic between Port Montt and Bariloche at Nahuelhuapi. A route like this in Europe would certainly be crowded with tourists, and prove a real gold-mine. But the everyday Chilean has not got his eyes open to the beauty of his country; seldom does he travel for pleasure in South America. And

when a foreigner has his holidays he goes to Europe, where he will hardly find anything so magnificent as the journey from Chile to Argentina across the Perez-Rosales pass.

In the evening our carriage stopped in front of the Hotel Llanquihue in Puerto Varas. On the road we had passed the half-completed railway joining Puerto Montt to the town of Osorno, and thus with the longitudinal main trunk. There is peace and comfort in that small summer place, Puerto Varas, where numerous families spend the favourable season on the shores of the large lake. We have good luck, the sun rises on a splendid day, and the small steamer takes us over a lake like a mirror, between the two famous giant volcanoes Osorno and Calbuco, which raise their shining white heads one on each side of the east end of Llanquihue. What a contrast to the landscape farther west, with pastures and cultivated fields between the grooves! German colonists have changed the province of Llanquihue into a land literally flowing with milk and honey, for butter and honey are valuable articles of export. The honey has a rather peculiar taste, but the bees have to collect it from plants very different from those we can offer them.

From an æsthetic point of view Osorno is an ideal volcano. The cone, 7403 feet high, is very regular, and covered with a cap of eternal snow. It is a long time since it showed any signs of life—the last eruption must be that described in his usual fascinating manner by Darwin, who was lucky enough to witness it. Calbuco is more than 1600 feet lower, and has not the same

regular shape, but is still active. With the glasses we could see tiny puffs of white smoke between the snow-drifts on the jagged crest; old Vulcan still has one of his forges there, and one day or other he will blow his biggest bellows again! Then the industrious people will tremble; mud-streams will again drench their fields, again the cattle will wade in the burning hot ashes with hanging tongues—as some years ago, when the sky became dark far away in Ancud in the middle of the day.

We land at the foot of Osorno. One of the old lava streams comes down there, a picture of devastation, where vegetation still struggles to give some life to the stony desert. Horses are ready, we mount and gallop across the neck of land to the next lake, Todos los Santos, and go on board a small steam-launch. Calbuco now lies behind. This lake has been called one of the most beautiful in the world. Perhaps this is an exaggeration —I have not seen enough to judge—but it is certainly magnificent. Over its mountains, virgin forests, and dark blue water there is a peculiar charm; it is an enchanted lake if there be one in this world. What a play of light and shadow on its surface, what colours when the sun is painting the peaks with gold and crimson, throwing longer and longer shadows over the calm water! Slowly the rosy gleam fades away: last of all Osorno is seen glowing, flashing a while in the last beams, and then lies blue-white and cold. Night has come, forest and water melt together in the shadow of the mountains, but on the peaks the moon casts its light. Osorno is wonderful in its silver cap. As we

Puerto Montt.

Ready to Start.

advance new, fantastic peaks appear; we turn with the lake, catch a glimpse of Tronador, and land in Peulla.

The day had filled our minds with delight, but the body had been neglected, and we were glad to see a laid table again, not having had anything since the early breakfast.

The manager of the company in Peulla, Mr. Roth, proved of great help in realising our plans. The next day he arranged an excursion to Tronador, the Thunderer, a mountain 11,382 feet high, partly covered by five glaciers, making a noise that gave its name to the mountain. With good horses we rode through the beautiful forest to Casa Pangue, at the foot of the Andes, where one makes the ascent to the pass. Here mules more suited to the ground were waiting. Along the stony bed of a glacier stream we slowly approached a large glacier, coming down right into the forest—a remarkable sight. The morning had been very fine, but we knew that rain could not be far off, and just as we had tied up the animals in the dwarf forest the first drops came, followed by a proper Chilean storm. We climbed across the huge moraines on to the ice-border itself, which is somewhat curious. All the lower part is covered by sand and gravel, and the glacier advances so very slowly that vegetation has time to take possession of it. There are small groves of dwarf trees, some getting not less than twenty or thirty years old before they are carried down to destruction. One may walk in the soft carpet of mosses and scrub without suspecting anything; suddenly a crack opens, showing the sheer ice, blue and cold. This is not unique, but I never met with anything like it before. By-and-by the rain,

which increased to a veritable deluge, drove us from the place. The horsemen who arrived in Casa Pangue that night were in rather a miserable condition. There was literally not a dry thread on our bodies. We made a fire, undressed, and changed the place into a fine exhibition of dripping rags. Wrapped in blankets, we whiled away the time before nightfall with a game of cards, and our dark-eyed hostess made us a nice *cazuela*. The next morning we returned to Peulla, and made excursions round it. The forests here still bear a marked resemblance to those on Chiloé. On October 10 we rode to Casa Pangue and got mules for the march across the pass, which is only 3300 feet high. It had been a favourable winter, and the road, climbing zigzag up the steep, forest-clad slope, seemed good enough on horseback. The traffic with the bullock-carts had not been opened yet. The difference in vegetation attracted our attention; the numerous leaf-trees became fewer, needle-trees more and more frequent. In the pass extensive snowdrifts were still left. For a short distance we rode on level ground, passed the boundary mark, and came down into the deep grave where Laguna Fria is situated. Its icy green glacier water looks cold indeed, and it needs sunshine and fine weather if the shores, at the foot of perpendicular cliffs, many hundred yards high, are not to produce a gloomy or even terrifying impression. We pulled across and walked over the isthmus separating Laguna Fria and Nahuelhuapi, following a road in the forest down to Puerto Blest. One need not walk on foot; a car drawn by a bullock and running on wooden rails

brings luggage and passengers down to the "hotel." How easily we had reached the famous lake in comparison with the pioneers who risked their lives only to behold its blue water! It has been compared with the lakes in the Alps, but who knows if Nahuelhuapi does not bear away the palm? It has so many different aspects: far to the west it washes the foot of the Andes, in narrow inlets reflecting the dark forests of alerce and cedro, thickly wooded isles making the scenery more varied; in the east it opens into the endless widths of the pampas, the mountains are left behind, the forests have dissolved into groves and patches.

In Puerto Blest we counted on getting one day for excursions, and on the next we expected the steamer from Bariloche. It had, however, started to blow hard, and no steamer came, but a storm, first with rain and then with snow and cold; winter made its expiring efforts, the shores were dressed in white, all the forest lay powdered with snow. We were shut in in a miserable room, where a red-hot stove made life almost insupportable. We could not complain, however, for in our bedroom the thermometer refused to rise above freezing-point; thus we got a tolerable daily average! One day passed; two, three, during which the gale raged with unabated strength, making the house tremble at each gust. Finally on the 15th the sun showed its glorious face again. There was still a good breeze, but as it was an ordinary boat-day we could be sure that every effort would be made to fetch us. In the afternoon the small steamer arrived after a rough voyage. The day had yet

another surprise in store for us: when the bullock-cart from Laguna Fria came rolling down the slope Pagels was enthroned on the top of the load, and after him came our old dog Prince lumbering along. An extra mail-day brought letters and papers from Punta Arenas. Now all of us were assembled, Pagels had performed the commissions we had given him with exactitude, and we could go to bed and sleep a couple of hours—not more, for long before the sun gilded the surface of Nahuelhuapi we slipped out of the bosom of the Cordillera, to start a new kind of life, and for the future march with this gigantic fold of the earth's crust to the west, whither we had been used to look out over the endless ocean. The small town, or rather village, Bariloche, was the destination of our steamer, and at the same time the starting-point for our long ride. We tried to make ourselves comfortable in the small, dirty inn, and began our preparations without delay. Pagels occupied himself making saddle- and provision-bags, while we had some excursions to make.

Bariloche is situated on the edge of the forest region. West of it are big cedar-forests (*Libocedrus chilensis*), in the east a yellowish steppe. Several mountains exhibiting interesting geological features were easy to reach from there, and as we did not want to encumber our caravan with heavy collections at the very start, Quensel and Halle made an excursion south for a couple of days. I myself went round the lake, ferried across Rio Limay, and stayed two days with an American gentleman, Mr. Jones. He has a big cattle-ranch, with a stock of several thousand head, his special business

being to breed mules, which fetch double the price of an ordinary horse. We had already solved our most important question, the horse problem, and were the happy owners of a small *tropilla* of ten animals and a mare, the *yegua madrina*, without whom no troop keeps together. They were rather small, and looked like skeletons after the winter. Eight of them were saddle-horses; each of us got two and the two others were to carry our baggage. Generally the horses in Patagonia are not shod, but as we were going to spend most of the time in the mountains we were forced to shoe them. Horses are cheap in Patagonia; in the spring prices seem to be higher, and we paid sixty dollars each—about £5 6*s*.

Our equipment was very simple indeed. We had no suits other than those we wore, and they were already old and shabby. The expedition also took one common pair of reserve trousers. Of underwear each of us had two shifts, but of socks we had a more ample supply. Most of the clothes, some necessary handbooks, perishable provisions, ammunition, a number of small, strong bottles of formaline or spirits, some instruments such as aneroids, thermometers, compasses, &c., films for the camera, a $3\frac{1}{2}$ by $4\frac{3}{4}$ ins. Kodak, notebooks, journals, and other small things were packed in two small waterproof English leather boxes, specially constructed to be attached to a pack-saddle. We only carried one rifle, a Winchester of small calibre. We had had serious intentions of bringing also a shot-gun, but it disappeared in one of our numerous flittings before we reached our starting-point—firearms are always

welcome in Patagonia, and I am pretty sure it is in use somewhere. Overcoats or cloaks we had none, but tied a poncho behind the saddle. Neither did we use riding-boots, only leggings or puttees—certainly to be preferred when one has to walk much. The two chests made one horse-load, at the top of which our coffee-pot was tied. The second load consisted of a small tent for two, very seldom used, but sometimes necessary to protect our equipment, a bag of provisions, and a small bag containing our kitchen requisites, which were of aluminium. The sleeping-bags, a simple blanket-bag with canvas covers, were used as underlayers for the loads, which were thereby prevented from galling the horses' sides. The load was fixed with a strong rope after Pagels' patent method—very practical but certainly not without intricate sailor's knots; woe to him who tried, if only in the slightest degree, to deviate from the approved arrangement: Pagels at once told him the truth. Every load was of about 150 lbs.—quite sufficient if one takes into consideration that the pack-horses had to work all march-days, the saddle-horses only every second day. Besides our own weight, they carried also the *maletas*, containing various articles of apparel, camera, plant-press, &c., and there also the collections made during a march were stowed away. Perhaps I ought also to say some words about our horse-gear. The pack-saddles were almost new; they had only been used for Quensel's travels, and were of the common South American type. Our saddles made a varied show: one English, one half English, half Chilean, one of the Falkland pattern, and one Argentine

recado. The rest of the harness was pure Patagonian, *bozal* and *cabresta*, always carried in the hand with the reins; the stirrup had the usual leather protection, the whip was a common *rebenque*.

The provisions were of the most simple kind. They were calculated for one month only—during which we certainly counted on the renowned Patagonian hospitality—and consisted of the following articles: ship's biscuits, flour, rice, oatmeal, coffee, tea, cocoa, *maté*, dried fruit, sugar, salt, and fat. Luxuries such as butter, condensed milk, &c., were, of course, not to be thought of. A concentrated pea-soup, called Knorr's "Erbsenwurst," we carried a supply of for the whole journey, as well as plug tobacco.

October 23 dawned with radiant pampas weather. For the first time we saddled, and it took us a good while to get ready, and not until half-past eleven could the caravan start. The solemn time had come, and, driving our troop in front of us, with good speed we left Bariloche, where people had only tried to fleece us. Before us a free life attracted us, full of privations but far away from cash-books and bills; with deep breaths we filled our lungs with the fresh pampas air, bringing with it an undefinable sense of happiness and freedom.

A group of Bariloche people had gathered to see our start. I daresay no one believed that we should get very far with our few horses, and no doubt they laughed at our dream of reaching Punta Arenas. Never did such a small caravan start in Patagonia on such a long and difficult journey, never before had one reached

its far-off destination with all the horses in even better condition than at the start. But we had burnt our boats; there was no return; we must succeed with the scanty resources we had at our disposal.

In the very last moment our expedition got another member, a shaggy dog. He had made Prince's acquaintance in Bariloche and came lumbering with us. In vain we made the most energetic efforts to chase him away; he hung on, and followed us all the time under the name of Pavo. And then we took our faithful friend with us to Sweden, where he gained citizenship only by royal grace, for Argentina at that time was declared to be infected with rabies.

CHAPTER XI

THROUGH NORTHERN PATAGONIA

During the first few days our march was not attended by any difficulties, as we only followed the common track, here and there visible over the pampas. On our right was the so-called Pre-Cordillera, where outlines are softer and the snow-patches insignificant. Deep ravines appear in the easily disintegrating tufas, and here dark forest-groves extend, though not reaching down to where we were travelling. Behind and in front of us lay the broken ground of the high pampas with hills and ravines, towards the east the endless undulating plains reaching far away to the Atlantic Ocean. The yellow sand gleams between tufts of stiff steppe plants and scented spring flowers, red or blue, yellow or white, now and then tempting me to alight to gather specimens. Everywhere the blue-green hillocks of *Mulinum spinosum* (an umbelliferous plant) appear, together with the stiff tussocks of grasses, the most noticeable growths on the dry, sandy steppe. Almost everything is prickly; the shrubs are armed to the teeth, the leaves of the grass end in a sharp needle, breaking off at the slightest touch: if one sits down carelessly one soon jumps up again, spiny like an urchin, but with the important difference that the spines are turned towards one's own skin. Now and then a cactus is

seen resting its growth on the stony soil. On the hills and plateaus vegetation is more scanty. It is almost a desert, red or yellow, strewn with sharp-edged stones, with stunted plants in the cracks, such as are specially fitted to endure the hardships of desert life; sometimes they look like a tangle of spines, out of which some few brilliant flowers peep forth; sometimes they are wrapped in a dense clothing of thick wool and have roots disappearing in the very bowels of the earth, where there is perhaps water to drink. The numerous spines are one of the nuisances of the steppe. Another is the wind, often blowing hard for a long time and enveloping us in a cloud of dust. But certainly we preferred this to the eternal rains of the west coast.

Hours pass, the sun bakes us red or brown, the dust gathers in thicker and thicker deposits. The bell on the mare tinkles, the hoofs rattle on the hard ground. The horses, untrained as they are after a long winter's leisure, get less willing, one or other tries to pluck a mouthful of the rough yellow grass. We must show more energy in driving the troop, and Pagels is frequently heard shouting a "verdammtes Kamel," in a very bad case increasing his anger to a "heiliges Kanonenrohr," the strongest expression he is able to lay tongue to, and surely a relic of his service in the navy. We welcome the small valley, our first camping-place, where a tiny stream winds between thickets of ñire. Patches of green grass attract the horses; we find a nice and sheltered corner and unsaddle. One horse is chosen and tethered to a long rope; the others are simply let loose, with the exception of the

mare, who is provided with *maneas* round the front legs. So one is more or less sure of finding the troop in the neighbourhood the next morning. The first camp-fire crackles, the *maté* makes its round, and a real fat *asado* of beef drips on the spit. Poor misguided vegetarians would not thrive here; meat and meat again will probably always be the staple food of the pampas. Here in Sweden we hardly know what good meat is. I learnt to understand my Argentine friend from the Antarctic voyage, José Sobral, who deliberately shook his head at the stuff he was offered in Upsala. I think that then I tried to defend it, but I have already withdrawn my defence.

The delicious steak whets our appetite, and from curiosity one soon cuts into it to see if it has not got the right colour. A pack-saddle or the sleeping-bag is our seat. A large piece of meat in one hand, the big sheath-knife in the other—that's the way to eat *asado*. A couple of biscuits and a cup of cocoa end our meal—dinner and supper at the same time. Generally we only fed twice a day, put a piece of biscuit or cold meat, if there was any, in our pocket, and ate it during one of the halts we were forced to make to give the horses a spell of rest. They got thirsty and we wanted to stretch our legs.

Darkness falls over the expanses, the stars come out, and our camp-fire more and more commands the surroundings. We gladly linger a while over our pipes; it is the most pleasant hour of the day, and, if possible, we want to prolong it. But there is a next day, and the thought of this makes us look for a bed in the bushes,

spread out the bag, make a bundle of the clothes under the head, creep down, and enjoy the last whiff of smoke. Ah, these nights under the open sky—it seems almost a pity to sleep—now out in the open camp, where the barren sand gleams between the grass and the ghostly silhouette of a single bush stands against the sky, now under soughing trees, where the moonbeams seek a way through the black foliage. Cross and Centaur wander the eternal road, the murmur of the stream is conducive to sleep. . . . A ghostly cry breaks the stillness, our dogs prick up their ears and bark: only a hungry fox who has scented our pantry! From Pagels' bag comes a "gute Nacht," one turns to find a comfortable position, and is soon at home among the firs and red-painted houses in the land far away, which now looks so marvellous to us. The night is clear and cold, and with great satisfaction we greet the first sunbeams that creep from the ocean all the way to the foot of the Andes. The day will get hot, and the thing is to get off when the freshness of the morning still lies over the land. First the morning toilet must be performed. The reader imagines, I should think, how we enjoyed a good wash in the purling brook; alas! we also imagined it, but it was seldom accomplished in reality. It did not pay, for after half an hour's ride one was as dirty again, and we were more satisfied with occasional thorough cleanings on solemn occasions. But there was *one* paragraph in our codex of cleanliness from which there was no exception: he who was to make bread must first wash his hands.

Work was certainly not lacking in the morning.

Collections and notes had to be put in order, the breakfast prepared, and the horses driven to the camp, caught, and saddled. Every day I had plants to press, which I performed in a simple manner, for naturally the usual heavy plant-presses were banished; but with two pieces of cardboard, a rope, and old newspapers I got in the settlements I managed all right. Breakfast consisted for the most part of porridge, meat, bread (when we had any), and coffee. It was soon eaten, cups and plates washed, the saucepan cleaned. This last job we took by turns; not even the palatable scrapings could make it enjoyable.

The watch-horse was saddled; we must look for the others. In most cases this did not give us much trouble, because when it was possible we carefully chose good pasture. It was much worse to catch the horses. With the ropes we made a corral, easy enough in the forest, but often very tedious when out on the open pampas, where hardly a single suitable bush could be discovered. Some of the animals were easy to catch, but others tried our patience, hiding amongst their fellows or breaking away. Finally the full number of six were tied and we started to saddle. We always saddled our own horses, and soon got very expert at handling all sorts of gear. The loads lay ready waiting, nothing was forgotten, and the first camping-ground disappeared behind a hill.

We could soon distinguish our destination for the second day, a single rust-brown peak, called Pico Quemado (The Burnt). Following the Cordillera, the track went ceaselessly uphill and downhill. But the

monotony was broken when suddenly the load on one of the horses loosened. We stopped and tried to catch him, but he bolted at once. The load slipped round, terrible kicks struck the boxes, and our coffee-pot soon was changed into a tragi-comic, completely useless utensil. "It served you right, you ass!" Pagels said, when the beast at last lay there, entangled in the rope. By-and-by we gained more experience, though not a day elapsed when we had not to rearrange the loads. The whole day we were ascending, it grew colder, and the wind freshened and felt biting cold in spite of the northerly latitude. At 4900 feet we reached the pass, and made downhill towards a small stream on the south side of Pico Quemado.

Another day and we came across the first houses, a small settlement, and in the evening stopped in front of a large wooden house in Ñorquinco. Here the Chile-Argentina Company has established a branch. The place is as typical of civilised Patagonia as we could wish: an iron shed for the telegraph office, where floats a faded Argentine flag, a *boliche* with horse-gear, bunches of stirrups and spurs, hanging from the roof, a pile of sheepskins thrown into a corner, heaps of clothing, gaudy handkerchiefs, black, huge-brimmed hats, knives and revolvers, long rows of tin boxes with multicoloured labels, and last, but not least, the *cantina*—the bar with wine-barrels, shelves of bottles in all the shifting colours of the rainbow, *pisco* (a weak Chilean brandy), æruginous Menta liqueur, Jamaica rum with its nigger head, whisky and brandy, some champagne bottles and the wash-up tub, where the glass is dipped an instant

before it is offered to the next customer. Outside at the traditional barrier some horses are tied, waiting for their masters. And they will have to wait. . . . The dice are thrown, laughter echoes within the walls. Swarthy individuals, pure Indians dressed in poncho and wide trousers, pulled together at the wrist, white socks, and a pair of slippers, Chileans, Argentiners, and *gringos* (strangers). A dirty policeman, dressed in the remains of a uniform, hangs about the bar. Conversation stops for a moment when we enter: evidently we do not look like everyday comers and they gaze curiously at our cargo. The social tone is free and friendly here. You suddenly find yourself a member of the party, a glass is thrust into your hand, *Salud !* to right and left, and then it is your turn to order a " round." If one has any idea of Patagonian customs, one takes care not to refuse—it might cost one dear.

It was easy enough for us to get dinner and a bed, but we thought more of our horses. Everywhere here the scanty grass was gone, and as there were no paddocks we were anxious lest the horses should run away—a starved horse strays until he finds something to eat.

At seven in the morning the policeman rode away to look for our troop, and we awaited his return anxiously. And when he returned alone we knew the truth: the horses had gone. There are many points on the compass, but we must seek in all. Kind souls offered their services, others confined themselves to discussing matters and made all sorts of guesses. The inspector of police, who had arrived, declared that the horses

most probably had gone back to Bariloche, and we sent a telegram there; others were inclined to suspect that thieves had had a hand in it; one fellow looked at the inspector and whispered to me that the police perhaps knew . . . Well, it would not have been the first time a thing like that had happened in the Cordillera. A number of *peons* (camp-labourers) were sent to look in different directions, and we strolled far away over the hills, provided with glasses; we saw some horses, but not ours. At noon, however, one of the men returned with the mare and five horses, but the other five had strayed away. New guests arrived in the evening; our horses were the favourite topic, and if good advice had been able to do anything, certainly there was plenty. We went to bed in a miserable state of mind. Five horses gone; we could not buy others without getting into debt, and who knew if anybody would be willing to give unknown strangers credit? And without these horses, the caravan reduced to half, it would prove impossible to carry out our scheme—an ignominious end to our bold hopes. The next day we arranged a systematic search. Indian peons got the description of the horses, and were promised a reward if they brought them back. They intended to track them down. The horses were shod, it is true, and therefore easy to distinguish from others, but the hardness of the ground and the strong wind would make matters more difficult. We resolved to continue our march with the rest of the caravan, leaving Pagels behind to watch over our interests and make inquiries of people all round in his beautiful

Spanish. However, we had almost lost hope of seeing our animals (some of them good horses) any more, and began to believe that thieves had driven them out of the way on purpose, only waiting for us to lose patience and leave the place—an old Patagonian trick often employed with profit. We left Ñorquinco and followed a cart-track, after a while turning to the west, through a very distinct pass, a true *portezuelo*, leading down into the valley of Rio Chubut. Large herds of cattle were grazing on the well-watered meadows, and, hungry as they were, our horses would not have refused a good meal, but time did not permit of this. Rio Chubut, one of the largest rivers of Patagonia, is here only small, though sometimes so swollen that it is difficult to cross. Now there was not much water, and we easily reached the small *estancia* Maytén, where we stopped for the night. Only the wife of the *capataz* (the "boss") was at home, and at first she did not seem very willing to welcome us, but after a while promised to cook some food and let us sleep in the peons' quarters. I do not blame her, for the master of the home was away and we might have been a band of rascals, a possibility not at all contradicted by our appearance. A gentleman rider in Patagonia brings several servants, and if one does any sort of work usually left to the peons this never evokes admiration, but only sheer astonishment.

As on every *estancia* one or two horses are tethered for the night, we let ours go, and in the morning a peon promised to fetch them. He went away all right; and came back after two hours—without the horses:

" he had not gone in the right direction," he said. A traveller, a kind fellow, who had spent the night with us, offered to fetch them himself, and finally, at noon, they came. The peon *had* been there, for a *bozal* that we had left on one of the pack-horses in order to catch him with less trouble was gone. There was no time to look for it; it was nearly one o'clock, and we had a ride of thirty-one miles in front of us. Over easy ground we followed the Chubut river till it bent to the east, and at nightfall reached the Lelej valley, where we soon perceived a group of large buildings, indicating a big farm. It was the headquarters of the " English-Argentine Land Company," whose manager, Mr. Preston, welcomed us in a very kind manner. Lelej is typical of a large cattle-farm. In a low building of red brick—the ground is cheap, so there is no reason to make houses of more than one storey—are the lodgings, offices, shops, and stores; all round are various workshops, such as a carpenter's and a blacksmith's shop, the house of the " bosses," and the plain *ranchos* of the peons. In the vicinity one does not look in vain for the piles of fuel, brought there from a long distance, the great, ever-increasing heap of empty tin boxes, the bulky, high-wheeled bullock-carts, and the rolls of wire. Round the houses stretch smallish *potreros*, or paddocks, for the hundreds of horses in daily use, and away over the hills the fences run straight as an arrow.

The peons are a peculiar class of people. Pure Indians or *mestizos*, they are nearly all doomed to eternal bachelorhood; one can hardly imagine a

Small Patagonian Sheep Farm.

married peon. All day they spend on horseback, at night they crawl in on the earthen floor round the cauldron with *puchero* hanging down from the roof, feed, smoke a cigarette, take innumerable cups of *maté*, then, wrapped in a blanket, they sleep on some rags in a corner. Pleasures of life take the form of *maté* and tobacco, and, of course, spirit, when they can get it. Here is the home of a peon to-day; to-morrow he does some foolish thing, takes too long a siesta, perhaps, and is sent off. In five minutes he has packed together his property, put them and himself on a horse, and has galloped away to seek fortune elsewhere. Of course, he has horses, often a whole drove; horses multiply and there is always pasture. But light come, light go; an attracting "pub," an unscrupulous publican, and after some days of splendid intoxication he rides away on a borrowed horse. A peon who saves his pay puts it all into his horse-trappings; one can see him in his Sunday clothes with a small fortune of silver on the horse, an ancient custom inherited from Tehuelche or Araucanian ancestors. It is curious to think that not many years ago this vast land was the free battlefield of the Indian, he who now is its most humble servant, whom any stranger with a piece of land thinks it fitting to kick and insult, always letting him understand that he belongs to an inferior race, living at the intruder's mercy. Sometimes it happens that he gains the confidence of his master, is promoted to *capataz* and gets his own house; and should it happen that a girl finds her way out to the camp, he may get a family

also. A common peon she does not look at; there are always persons of higher rank who are glad to take care of her.

Life in Lelej goes like clockwork. All the employees are Englishmen or Scotchmen and have brought their customs to the new country. On the stroke of half-past six they are sitting at breakfast, where every passing gentleman may be sure of a seat and a mutton chop; the bread is as English as one could wish, and luncheon or dinner arrives with magnificent beef or roast mutton. And if one discovers a football or golf clubs it is nothing astonishing. Lelej appeared to us a very well managed enterprise, where people work ceaselessly.

The greatest difficulties these settlements in the Andes have to contend with are the bad communications. Everything goes by cart to the Atlantic coast, making journeys lasting weeks and months, under great difficulties of finding water on the half desert-like plains. Great railway schemes are now spoken of, or even started, and then Patagonia will be able to show what she is capable of.

Lelej was the last telegraph station, and we were in continuous communication with Ñorquinco. All hope seemed gone, as Pagels asked permission to buy a new horse and join us; but I asked him to stop another day, which proved to be a piece of luck. We had plenty of work in the neighbourhood—made a ride up in the mountains, where snow still lay in the forests, just dressed in the verdure of spring. Quensel visited the flourishing Cholila valley in the west, and Halle was busy collecting fossils. However, we worked

with depressed spirits. Certainly Mr. Preston had promised to guarantee us money if we telegraphed to Buenos Aires for some; he had no horses to sell us himself. Later it proved that it would have been very difficult to get any. We did not want to get the expedition into debt, as it was our pride to make an exception to the rule. November came, still no news. Then, on November 2, like a sunbeam from an overclouded sky came the following telegram: "Hay noticias de caballos perdidos; Señor Pagels fué traerlos, seguirá viaje mañana," or, "Lost horses traced; Mr. Pagels gone to fetch them, continues his journey to-morrow." The title plainly showed that Pagels had understood how to inspire due respect! It had been sent the day before, and we could expect him the same day, and were almost ready to embrace the fugitives when they appeared. Everything had nearly come to nought; Pagels had bought a horse on credit, and had one foot in the stirrup, when an Indian came on horseback and told him that he knew where the horses were. What a big weight was off our minds!

Merry as before and with a complete caravan we started for the next halting-place, two days off. Now and then we put up ostriches (*Rhea*), which flew in all directions with stretched wings, chased by our dogs, who could never overtake them; now and then a small herd of guanacos passed, but they also left Prince and Pavo far behind. We had just unsaddled for the night at the side of a small tributary to Chubut, when on the other side of the water we saw the silhouettes of more than a hundred guanacos against the evening sky. It

would have been easy to get a good bag, but as long as we were in communication with settled parts we need not leave a settlement without a couple of fine steaks added to the loads, and wild animals were safe from our bullets.

Guarded by the Esguel Mountains, a large plain stretched before us, and far away we could see two high peaks, between which our way would run, through the so-called Nahuelpan Pass. It is a narrow but fertile valley, with small cornfields round the grey Indian *ranchos*, shadowed by small groves of cedars. We were not quite sure of the way to Clarke's place, which we wanted to visit, and asked an Indian who passed us; he told us that we had missed our way, and would have to go back again, but also that if we continued through the pass we should strike Underwood's farm in "Colonia 16-de-Octubre." Certainly we had special reasons for seeing Clarke; Preston had sent letters to him, and besides he was an educated man, a B.A. of an English university; but the *détour* would be too much for our animals, and we continued down to Underwood, where we arrived after a march of thirty-four miles. The neat little brick cottage lies embowered in a garden. Mr. Underwood was away, but his wife welcomed us, and we soon felt at home. By a happy chance Mr. Clarke came driving there the same night, bound on a business journey through the valley, and thus we had the great pleasure of making his acquaintance.

The "Valle 16-de-Octubre" is one of the most fertile and populous of the transandine valleys. It is watered

by Rio Corintos, further down joining Rio Futaleufú, which empties into Lago Yelcho, in its turn discharging by Rio Yelcho into the Pacific. We stood by the same river where we had camped some months earlier, but the entire Cordillera was between the two places. Here Chile had certainly wanted to emphasize the principle that a water-divide was the natural frontier, but as the valley had been colonized by Welshmen from Chubut (Trelew), Argentine kept the whole valuable part of it. We wanted to give our horses a rest and let them browse a few days, and Clarke came with us to look for a farm where people would be willing to lend us horses for our excursions.

Shut in by magnificent mountain-chains, this valley is a real gem, green with vast meadows, wheat-fields, and clover-fields, adorned by nice country houses, where fruit-trees and berry-bushes, cauliflower and lettuce were a delight to behold. We became quite homesick when we rode through. At the schoolhouse we stopped. The children are taught in Welsh, but most of the people we met also spoke English and Spanish. We crossed Rio Corintos, where fat cows of English breeds grazed on the banks, and made a halt at a farm of very modest aspect. The owner, however, was a wealthy man. He was out marking colts, but his wife asked us to off-saddle and come in, and welcomed us with a *maté*. Then Don Antonio Miguens came. He received us very kindly indeed, promised us horses, and proved a thorough gentleman. He is, besides, a very original man.

On November 6 we rode further into the valley with

fresh horses. At the beginning we made good speed; then the valley narrowed and the patches of beautiful cedar-forest, further east only growing in the ravines, closed into a dense covering on the steep slopes down to the broad river that rushed westward, embracing green islands. Ever since the time when the valley was explored from the Pacific side a path has been left, but it is anything but inviting, running up and down over neck-breaking barrancas, through thickets and stony places. The horses were used to this ground, and did not hesitate, but jumped over the barricades of fallen forest giants. One had better not sleep in the saddle, for one's knees are in continual danger from trunks and huge blocks. We met passages so intricate that we had to leave them to the horse's judgment—the only disaster that happened was that our coffee-pot (the second!) suffered a fatal shock. However, by giving it another kick we made it possible to use for the day. The vegetation more and more showed signs of the rain-forest, our old friends the beeches and myrtle-trees appeared again, and when we reached the boundary-mark high up on the south bank of the river Chile welcomed us with rain and fog.

With a sense of regret we parted with the valley and sought a way south over very broken ground with dense brushwood here and there, making it difficult to keep together. We were not at all sure of having chosen the best way till we came in sight of Lake Rosario and the extensive peat-bogs at its west end, where we passed it. Here Jeremias, one of the pack-horses—thus named because he uttered strange, plaintive

sounds when being saddled—got a chance to prove his eminent intelligence. We had suspected that he was not quite normal, and now made certain. He caught sight of some horses on the other side of the swamps, was seized by a sudden desire to make their acquaintance, and in a rapid gallop flew down the slope. We followed him as fast as our horses could carry us, but only arrived to see him sink down, kick in desperation, and disappear to his belly. It was a wet swamp of the worst kind, and we nearly lost him. At first all efforts proved futile, the ground would not bear us, but we managed to unload him, and thus saved both him and the load.

At a tributary of Rio Carrenleufú we camped for the night, and the next morning made for the main river. We had some trouble with our horses, as two of them had sore backs and could not be used. The least pressure of a saddle might render them useless for weeks.

We tried to set a course straight for a settlement indicated on the Argentine map. The ground was very poor, innumerable ravines filled with thickets, and sometimes so wet that the horses had to wade in loose black mud over their knees. It was more by good luck than good management that we struck the house of Robert Day, where hospitality indeed had its abode. Seldom do you find its laws so strictly kept as in Patagonia. In the settlement of white men or the *rancho* of an Indian, everywhere you are received with open arms, and the best there is is put on the table. Every effort is made to keep you there; never

is the house too limited or the table too small. We shall never forget old Day, his jolly wife and swarm of children. The eldest sons had built their own cottages at other places in the valley. Day is a true pioneer of the old school, and in our Patagonian Baedeker we have marked him with three stars. Originally, he, as well as so many others, had come to look for the yellow metal, but finished in good time and now has a rather flourishing farm. However, he complained of the Government. On repeated occasions he had offered to buy the ground, but never got a definite answer; he had lived there seventeen years, but could not feel sure that he would not be chased away any day it pleased the authorities.

Hitherto our direction had been more or less straight south, but from Carrenleufú we bent eastward in order to visit the camp round Rio Tecka, one of Chubut's sources, and at the same time make the acquaintance of one of the very few Swedes in Patagonia, Don Carlos Flach, of the well-known Swedish noble family. In Valparaiso we were told that he was manager on an *estancia* belonging to the Cochamó Company, named after Rio Cochamó, which discharges into the Reloncaví Inlet not far from Puerto Montt. There a road has been made across to the Pacific coast, but it is said to be passable only to riders. Only one day's march separated us from Pampa Chica, where the sought-for *estancia* should be, but the track is rather ill-famed because of the extensive *pantanos*, and, according to Day, sometimes quite impassable. The saddle-horses were happily brought over the bad places, but of course Jeremias was bogged and caused us trouble and loss

of time. In the afternoon we came across a flock of the company's sheep; they were badly afflicted with scab, the wool hanging in tatters all round them. Well hidden by the foot of a hill there was Flach's cottage, and the master of the house was not a little astonished when three dusty riders greeted him in his own language. A merry encounter it was, and he at once offered to let us share his small hut; the lodge had burnt down some time previous to our arrival. The company seemed to be of the Yelcho sort; it had gone into liquidation and was selling the animals. Flach was about to leave, only waiting to get his money. He was thinking of getting a piece of camp further south. Again our horses could rest, for Flach lent us some for our excursions. The vegetation was glorious here, and I had plenty to do from morning to evening.

It had proved more than necessary to get two more animals in order to change the pack-horses, and this problem was solved in a most unexpected manner. Flach presented us with one, which belonged to nobody, but had been two years on the company's camp. Of course he was baptized Flax (Flach's; untranslatable Swedish pun; Flax is = luck), and turned out one of our very best horses. Besides, we bought a small but good horse; under the name of Johansson he carried me at least every second march-day during the rest of the time.

Of my horses I kept Solo, the largest of our animals, but the old Manasse was degraded to a pack-horse. Quensel got Flax, Halle took Jacob and gave Lazarus (a long time with a sore back, thus his name) to Pagels,

one of whose horses became a pack-horse. The new horses learnt to keep with our troop by getting coupled with the mare the first nights. This lady was not tame, and often annoyed us with her impertinent looks and her obstinacy. To ride a mare is hardly thinkable in Patagonia.

Thus we considered ourselves well off, bought more provisions, and on November 15 left our new friend, whose small cottage soon disappeared from sight behind the yellow hills.

CHAPTER XII

THROUGH THE CORDILLERAS TO THE PACIFIC COAST

The pampas visited during the following days showed us a new feature of Patagonian camp, the want of water and fuel, which makes the journeys from the settlements to the coast somewhat difficult. Had we not found some wood left from a cartload once sent by Flach, we should have been confined to very dry food. The water was not of the best, full of innumerable small animals, larvæ and crustaceans, but boiled it did not taste bad; besides, there was more nourishment in it than there would have been otherwise. There was no lack of small lagoons, but they are all without an outlet, and round their edge is a thick white crust of salt. The water is bitter as gall. In spite of that one likes to stop there a while to enjoy the spectacle offered by thousands of beautiful water-birds. Large flocks of bright flamingoes walk about in the mud, hundreds of black-necked swans glide round their large nests, resting in the bulrushes; nearer to the edges moorhen and many waders have their quarters; large fat geese walk round cackling on the shore, and small ducks run through the channels in the salt-powdered reeds. Every find of eggs is welcomed for our kitchen.

In the valley of Rio Pico we again met people; German

settlers brought in by a company to drive sheep and cattle-farm. They also wanted to try agriculture, and had a nice garden already. As usual, we were received exceedingly well, and my journal says that we slept on mattresses—a rare pleasure.

Before us lay a *meseta*, a table-mountain built up of loose deposits, which we had to cross. The *mesetas* are characteristic of the rand-zone of the Andes; further south they have a cover of basalt, making it difficult or even impossible to cross them with horses. This plateau did not offer any difficulties, but, instead of that, features of great interest, which also made progress slow. We ascended to a height of about 3300 feet, and went down into the Frias or Cisnes valley. The large Frias river originates far east of the mountains, but nevertheless discharges into the Pacific Ocean, and here for a stretch Chile's proposal for the boundary was approved at the award. The piece of land is of slight importance; only in the eastern part is there good grass; proceeding westward, one soon gets into impenetrable virgin forests.

At first we looked in vain for any trace of people; we did not know where the *estancia* was, and it was almost dark, when, at a distance of about two miles, we sighted the well-known houses, proving the existence of another customer of the "Corrugated Iron Company, Limited." The company in the Frias valley, as others in Chilean Patagonia, has got leasehold for a number of years; after that time the land is disposed of by auction; and it is considered that the company should be able to give the best tender. One of the conditions

for the concession is that a road is made through the mountains to the Pacific Coast, in order to provide communication with the rest of Chile. At the present all transport goes to the Atlantic, and only Argentine money is used. The company has not started the work with the road yet, and nobody knows if it will ever be able to bring it to an end before its time has elapsed. The cost is tremendous.

The director was not at home, but his manager, an Englishman from South Africa, showed us great hospitality. In his company we made an excursion far into the valley, where the open ground comes to an end and the roble forest replaces it. We here met one of the most notable Patagonian mammals, the small tuco-tuco (*Ctenomys magellanicus*), a lovely gnawer, somewhat recalling the lemming. It lives on the roots of plants and digs labyrinths of tunnels, completely undermining the soil. Without suspecting anything you come along at a canter; suddenly the horse goes through with his front legs. You had better proceed cautiously or you will easily get your horse hurt. Sometimes it is not possible to avoid the tuco-tuco ground. We had to cross the river several times before we came to the forest-belt; here for the first time I saw the Andine deer, the huemul (*Furcifer chilensis*), in company with the condor supporter in Chile's coat-of-arms. Like other deer the huemul is of elegant appearance; its colour is light brown with white on the belly. The horns are no remarkable trophy; generally they only have four points. Fifty years ago the huemul was regarded as a rare animal; there was even a time

when he was almost as mythological as the unicorn or the griffin; but from the Boundary Commission we learnt that he is common in the dry forest-belt east of the Andes. There his well-marked paths cross each other in all directions, running from the mountain-meadows down to the streams in the valleys. This day I regarded him only as a friend of nature does, but later we welcomed him in order to see his life's blood. However, we never killed for the sport of it.

We were just back in the farm and it was getting dark when we heard the sounds of an approaching caravan, which soon arrived—horsemen, a troop, and the high-wheeled pampas carriage. It was the director, Mr. Brand, who had arrived from the coast. He brought his wife and a baby one month old with him; they had been shaken a fortnight on the rough camp, but did not look any the worse for that. Mr. Brand seemed very enthusiastic in his work, but told the rather amusing story that the company's directors in London are so despotic that he dared not shear a sheep without asking permission by telegraph! Concerning the future, he did not hide from himself that it looked dark for the moment, but better days might, of course, be in store. Many a time as one is looking out over the fertile subandine valleys one is ready to listen to those optimists who prophesy a splendid future. They please your eye—well-watered meadows, streams of great horse-power, forests with good timber, and the Cordillera with all its grandeur. The lack of communications, however, is the great drawback, causing the

ruin of people, especially if they have to clear roads to Chile!

Our way south was closed by the mountains round the Lakes Fontana and La Plata, and we found it better to make a *détour* round the foot of the mountains out on the open pampas, which truly was not in accordance with our principles. At the pass over the Senguerr river, the outlet of the above-mentioned lakes, a German has established a combined store and public-house. Further down the river live some colonists. It looked as if Rio Senguerr had devoured all the water of the neighbourhood. Under a broiling Sunday sun we rode into the mountains, but nowhere a drop of running water—one lagoon after the other, so white that one tasted the salt far off, green grass and nice flowers, but not the characteristic fringe of brushwood indicating a murmuring brook. This day we came across the largest herd of guanacos we ever saw, not less than four or five hundred, a magnificent sight.

We had now spent a couple of days in Argentina. Again we arrived in Chile, but that did not help us, for we had to ride thirty-four miles before we found water. Down in a valley a dark band of foliage wound; out of it the white skeletons of dead trees stood gaunt and lone, promising us a regular camp-fire. Round the east basin of Rio Aysen with its numerous tributaries Chile has drawn its frontier-line. Again we were among forests and mountains, and the open spaces which are not a result of man's labour are easily counted. Our way led into the valley of Rio Ñirehuao, where well-developed terraces on the sides

attracted our attention, and on November 25 we reached the first *estancia* belonging to Compañía Industrial del Rio Aysen, where a kind Scotchman offered us such dainties as we had forgotten the existence of—milk, butter, bread, all fresh. Very soon we got to know that we were back in the forest region. Spoilt by dry and sunny weather, we did not like to experience cold or rain or snow. To the east the sky was clear over the steppe, to the west a rainy fog rested heavily on the forest-clad ridges. In a snowstorm we left this place in order to ride down to the main *estancia*. The company has made a road between the two places, which, considering the difficulties, cannot be called bad at all. We met a party of shepherds employed in lamb-marking. Ewes and lambs had been driven together into large flocks; there was a bleating in all sorts of keys. The lambs are driven into one paddock, the mothers into another. The small, kicking beasts are caught, and off comes the tail and the ear is bitten through! If it be a ram he is castrated: a cut, and the testicles are hauled out with the teeth—certainly not a very agreeable, but nevertheless a practical method. Then the poor creatures are let loose, and rush in among the ewes with wild jumps, making a sorry music looking for their mothers.

The route winds over a *meseta*, reaches a height of about 3000 feet, and drops again into the Coyaike valley: the river is one of Rio Aysen's tributaries. It rained hard when we rode through the high roble forest; the farther west we came the worse was the road, in some places hardly passable. For long stretches it

was plastered with sticks, giving our horses much trouble and bringing them innumerable lashes. Some of the rebellious ones took their own way through the thickets and gave us extra work. Here and there the forest had been burnt, and sheep ran about among the black skeletons. Pavo, who, according to his custom, regarded sheep exactly as guanacos, soon got his hide well tanned; it was not very pleasant to come as guests to a farm with a dog who would worry sheep.

The sun burst forth; from a hill we beheld the Aysen valley at our feet; here and there a bend of the river was visible between thick foliage, which glittered from the rain; about eight miles further down we saw the houses of Coyaike bajo, our destination, and in the evening of November 26 we made our entry there. It was the biggest place we had seen since Bariloche; the houses are arranged in two lines with a broad street between them, and Flax as well as Johansson, who had never seen anything so imposing, visibly protested against such an excess of civilization. The head of the place, Mr. Dun, was not at home, but he had written to his people, evidently asking them to treat us well, for they did so, promising to put people and horses at our disposal, so that our own animals got a week which they sorely needed to gorge upon fat grass and heal their backs.

Here, amidst the wildest wilderness, on all sides surrounded by virgin forests and mountains, was a small piece of old England—English language, food, and customs. Many a spare hour we spent in Mr. Stewart's cosy home, where he and his old wife vied

with each other in taking care of us, offering us all sorts of dainties, almost too sharply contrasting with our plain diet.

Our principal task here was to ride down to the Pacific, using the road made by the company. We borrowed a troop of big, strong horses, a mule for the cargo, and a small, fat Chilote boy. Pagels had to stop behind, well occupied with mending and darning our damaged property. At a cost of 350,000 pesos the company has constructed a road of fifty-one miles down to the mouth of Rio Aysen, unlike even the worst road you may find in the United Kingdom. We must not expect too much, however, for the difficulties here are enormous. Across or round narrow abysses, climbing zigzag, through stony, rushing waters, on narrow bridges over the precipices, thus runs the first and best part of it. Then come the steep granite barrancas along the river, where the road has been blasted in the shape of a shelf in the wall. It makes a turn and crosses the Baguales ridge. Here is the boundary between the easier roble forest and the evergreen one, which I have introduced to the reader on several occasions. Once more we entered the kingdom of eternal rain. On both sides the forest stands, dense as a wall, with bamboo thickets and creepers high up in trees, and the limited space left is filled by half-rotten trunks. A never-ceasing rain completes the picture. The poncho is heavy as lead with water, and our boots are filled slowly but surely. Now and then our steeds shake off the water, and then fall into their old *tempo* again. The road is terrible. The horses

Patagonian Rain-forest.

wade knee-deep through a tough clay or a loose black mud, where one never knows how deep it is to the bottom and where the entangled roots trip them up. Now and then, often for half a mile or so, the road is plastered with sticks; here one does not sink down, but it is slippery as glass instead, and we are filled with admiration of the surefootedness of the horses. On downward slopes it felt like it might feel riding down a staircase, an experience I never had.

We halted at Rio Mañiuales--thus named because there are large quantities of mañiú (in this case *Saxegothea conspicua*) on its banks. It is the largest tributary, and Halle and I resolved to stop there; Quensel ferried across it and continued down to the coast. With dripping clothes we sat down by the hearth in the small cottage where the ferryman lives, and soon his three little girls gathered round us, curiously looking at the travellers from a far country. Their mother offered us a cup of tea and told us about the monotonous life in the forest. Sometimes the rain makes the road impassable and one is cut off from the rest of the world, sometimes the river rises, causing serious inundations: last spring it had carried away one of the ferries and threatened the house with disaster. She was very proud of her husband, who was away for the day, and showed us his medal with three clasps from the South African War. For once the climate gave up its bad ways and we got a comparatively fine day with only a few showers. The air was filled with the strong scent of *laurel* (*Laurelia serrata*, order *Monimiaceæ*) and *arrayán* (*Myrceugenia apiculata*,

a myrtle-tree), the *corcolén* (*Azara lanceolata*, order *Flacourtiaceæ*) was completely covered with golden mimosa balls, the *ciruelillo* (*Embothrium coccineum*, order *Proteaceæ*) was on fire with clusters of crimson flowers. Yellow violets, fine orchids, mimulus, and calceolarias adorned the soil. At the river the bamboo (*Chusquea colihue*) showed a luxuriance I did not see in any other place—about 30 feet high, and so thick that it could be used for building purposes. One would hardly believe that it is only two or three days' journey to the dry steppe.

Quensel returned after a boat-trip to Puerto Chacabuco, with greetings from " el Pacifico," and now we all went back. We had reached our goal, had made a botanical as well as geological section through the mountains, and the following days were spent in detailed studies of certain interesting places. On our return, just as we were about to climb the slopes of the Baguales hill, we heard shouting from above, and slowly a caravan of bullock-carts came down the sharp turns of the road. As one sees these monstrous carts with their three or four pairs of oxen one understands what it costs to keep a forest road in order. We had to wait till they had passed. Progress is not rapid; they need three days for the trip. Now and then we met Chilotes occupied in repairing the road after the devastations of the spring flood.

In Coyaike we bought provisions for the next part of our journey. Hitherto we had met people now and then and found great assistance, but between Aysen and Lake San Martín, where we intended to make our

next stay, we could hardly count on meeting any inhabitants after the first days of march. We thus had to carry with us everything except meat, and the load was almost heavier than at our first start. The provisions, calculated to last thirty days, consisted of about the same variety as before. However, we could get neither oatmeal nor biscuits, but had to bring a flour-bag. The result was that bread was of rare occurrence on our table. It took too much time to make it; pancakes were easier made; besides, it was good to have something to long for and to celebrate feast-days with.

From Puerto Montt we had sent a box by steamer to Aysen; there was paper for drying plants, spirits, formaline, &c. We left two boxes of collections in care of the company to be forwarded to Punta Arenas; only in this way was it possible to make more extensive collections. We had already sent one box from Lelej and another from Valle Frias, and we hoped to find them all on our arrival.

On December 3 our caravan started again. On account of the rest and the good grass our horses were very fresh, and with greater speed than usual we disappeared between the forest-groves, followed by the waving of the Aysen people.

CHAPTER XIII

LAKE BUENOS AIRES

During the first few hours we followed the Coyaike valley back the same way we had come, and then turned south in order to cross a ridge, separating us from the Mayo valley, which did not look very inviting. A disagreeable yellow-brown colour told us that we should find the crossing of it unpleasant. Generally we all used to ride after the troop, two just behind and one on each flank, but here we came to a passage where two of us had to keep ahead of the caravan and survey the camp, or we might be bogged without a warning. The swamps are very treacherous here, and sometimes we climbed a hill to get a view of the terrain. Now and then we tried to follow the track of a guanaco; this is, however, no particularly safe device, for where the light guanaco can pass a heavy horse might easily sink down. I rode Solo for the first time after his recovery. He sank up to his girths twice, and I had to throw myself off instantly and get him on safe ground again. Rio Mayo presents a good example of a very small brook offering serious difficulties. If a stream, running deep down in a sort of furrow with the peat projecting like a shelf above the water, is so broad that it cannot be jumped, it is anything but easy to get the horses across. It is not so bad if there is a firm bed, but in many cases

the animal sinks deep down in loose mud and is lost. Also a bed of sand or gravel may be troublesome; even if one can urge the beast down it is much labour to get him up again, the peat everywhere giving way under his hoofs. It is of the utmost importance to find a suitable ford, even if it should cost you loss of time. Along a considerable distance of Rio Mayo we found only one place where we could cross this insignificant stream, and it took us half an hour's hard labour before we had the horses safe on the other side. The main thing is to master the mare; the others will follow her—if they are not like Ruckel or Jeremias, who had wills of their own and nearly turned our hair grey.

The Mayo valley is said to be one of the last refuges for half-wild Tehuelches, living in their *toldos* in the ancient manner. We did not see any traces of them, but at a distance sighted a *rancho*, horses and cattle indicating that the valley was inhabited. We had no time to stop.

In front of us lay a great obstacle, a *meseta* raising its barrancas to a height of 4750 feet. There is a path cut through the forest west of this mountain, but it had not been used for a long time and was said to be almost impassable; the people in Aysen had advised us not to try it—they did not know anything of the *meseta* itself, but thought it would be easier to cross it. To ride round its east end is simple, but did not suit our plans. Meseta Chalía, named thus because the Rio Chalía originates on its west plateaus, consists of loose material and lacks the basaltic crust that made the table-mountains so dreaded. But

we were soon to see that the difficulties were not less here.

A trying climb commenced, and leading the horses in zigzag we reached the edge of the plateau, extending in front of us level as a floor and covered with round stones like cobbles; it reminded us of the market-place in a small town. For the most part there was no vegetation, only strips of a meagre heath of diddledee, strikingly recalling Alpine tundra. We waited some minutes to recover our breath, and then set out. Some few steps—what does this mean? The pavement, looking so firm and safe, will not bear us! Between the blocks, which fret the skin, the horses go down into a terrible viscous stuff: when the snow melted the soil had been saturated with water—it is what geologists call solifluction, though the soil does not move, the ground being fairly horizontal. Some snow-patches were still left; at their edge there was no bottom. It was desperate work. To ride was not to be thought of; we tramped and tramped, dragging our saddle-horses and whipping the others. We struggled to get on to the firm strips of heath where we could breathe a moment, which we really deserved, for the misery lasted several hours. Suddenly we found ourselves at the edge of a ravine, so steep that we had not observed it till we were close on it. Every small brook, fed by the snowdrifts, has cut a very deep canyon; the sides are clad with thickets of ñire, dense as a hawthorn hedge, and the bottom is filled up by wretched swamps. But we must go down it. The horses disappeared in the thick carpet, the loads were caught up by the branches, and we needed all our

energy to assemble the caravan in the bottom of the ravine, where we found a very welcome camping-place. The next morning we first worked our way out of the canyon, and stood on the plateau again ready to recommence the fight. It grew still worse than the day before. Not even the patches of heath bore us; the horses strove to get there, only to find them occupied by the burrows of the tuco-tuco. Numerous ravines had to be crossed; we made a small *détour* higher up on the *meseta*, where we crossed the last, or rather first, rivulets on snow-bridges, at a height of 4600 feet. It was ridiculous to see the horses' fright at the snow, hitherto only seen from some distance. They required both abuse and the whip, but eventually obeyed, and that was the principal thing.

Finally we stood at the end of the *meseta*. Three thousand feet below extended the Koslowsky valley, with inviting green meadows; on the other side was another *meseta*, and to our right was the main range of the Andes, blue and violet in the pale evening light. Now arose the question of getting down into the fine valley, which was more easily said than done. The slope fell away perilously near a right angle. It was furrowed by numerous rivulets, hidden under entangled ñire thickets. We prospected along the edge of the plateau, and, as nothing better could be seen, chose the least uninviting of the ravines. I daresay none of us will ever forget that descent. Hardly able to find foothold, the horses simply slid down the slopes; now and then one fell, but got on his feet again; another broke away, made desperate efforts to gallop up again, and then

stopped without knowing what to do. I do not remember how many times we had to let go the horses, climb up on hands and knees, and drive down the much-cursed Ruckel, but I know he tried our patience to the utmost. Rather shaken, we and the horses eventually reached the bottom of the ravine. The slopes were clad with forest-growth and were very steep, and our only chance was to follow the dry, stony river-bed, where huge blocks sometimes barred the way. Thousands of trunks had rolled down from the sides, forming irregular barricades and stopping the march times innumerable. The horses lost their senses, rushed at the sides, dashed into blind alleys, turned round and tried to get back up the canyon. We divided the troop up, each of us taking charge of some animals. Step by step we advanced, giving encouraging shouts, and lashing and chasing fugitives, who baffled all our efforts to keep order. Here indeed was a good opportunity for Jeremias to distinguish himself, and to be sure he did not fail. Lagging behind for a second, he took advantage of an unguarded moment, turned aside, and climbed up through the forest with a speed and energy that he never showed otherwise, and disappeared. A special expedition was sent to fetch him down—and he got a well-deserved thrashing. I had always suspected that horses have not got much real intelligence, but after studying them in all sorts of situations I *know* that they have not.

By-and-by, when the slopes became less steep and the forest higher and less dense, we took refuge in it. One of us acted as guide, and with some patience one could

get the *yegua* to follow; then it was the business of the drivers to keep the others together. With loud shouts of joy we greeted the open ground—though we *could* easily keep from laughing when we discovered that the tuco-tuco had taken possession of it. At some distance a large animal sprang to its feet, made some cat-like leaps, and was out of sight. Pagels said that it was a puma (*Felis concolor*), and very likely it was. The puma, here generally called " el león," is the largest and most dangerous of the carnivora in Patagonia. He is very common, but seldom seen, keeping out of the way by day. He does not assault man unless wounded, but takes to his heels. However, he is the most dreaded enemy of the sheep, killing them not only for food, but also for the sport of it. Often he returns to his prey, and advantage is taken of that habit to poison the carcass with strychnine, and the next day may find the puma only a few yards from the lamb. To our surprise we did not at once find a camping-place with running water; several of the rivulets from the *meseta* disappeared in the swamps at its foot. But finally we found an idyllic little place, and were not long in off-saddling. Both we and the horses were longing for a rest. We had marched ten hours without stopping; and even if the distance did not much exceed twenty miles we did not feel ashamed of the result.

It proved necessary to give the horses a day's rest. For us these days were no rest; generally they were employed in long excursions on foot. The flora of the Koslowsky valley is rich in species, the summer had now come, and a lot of plants, new to me, were in full flower.

We were without meat, and Quensel went to look for human dwellings, which were reported as existing in the valley, while Pagels took the Winchester and went to shoot something. In the evening we were all back in the camp, each with his prey. Quensel had met a *mestizo*, who led him to his *rancho* and gave him meat. Pagels returned with some small ducks and a hen eagle; she had some very welcome eggs inside her, which were delightful in the soup. We had had a very meagre diet the last few days, but now made up for the loss. Quensel had promised the people in the *rancho* that we would visit them when we crossed the valley. Their miserable hut, almost a veritable *toldo*, lay hidden in a valley —the small river joins Rio Huemules, which in its turn discharges into Aysen. The husband, José, was of mixed breed, half Chilean, half Araucanian; his wife was pure Indian and had been a real beauty. We sat down with the family; evidently we were expected, for when the lid was taken off the cauldron it was found to contain rice-gruel. As far as I know I never showed any predilection for this dish before, and to-day it seems peculiar that I then ate three platefuls with great gusto. So it was, however. José told us that there was quite a new and small settlement on the other side of the valley, and gave us directions for our march. After a while we came to a cottage, where half a dozen sheep-dogs rushed out barking frantically and calling out the inhabitant. He was an Englishman called Brookes, a very nice man, who had settled with about 2000 sheep and seemed to enjoy his life thoroughly. With him lived also a Dane, who was glad to find his

native tongue for once understood. Brookes is one of the few camp-men I met who was interested in nature; he started to speak of the steppe flora, and showed me a couple of rare plants that he had in his garden. We wanted to get on after a short while, but the kind souls were so persistent and we found ourselves so comfortable that we resolved to stop for the night, the more so as the Dane, Espersen, offered to show us the best pass over to the next valley. In the evening Mr. Lundberg, from Kuopio, in Finland, came riding in, and invited us to visit his place further west in the valley, which we were sorry not to be able to do. His mother-tongue was Finnish; once he had also spoken some Swedish, but five-and-twenty years had made him forget both and he had never learnt a new language thoroughly. He was best acquainted with English. His case is not unique, I am sure.

The Koslowsky valley lies only a thousand feet above the sea and looks fertile. Probably it will be colonized before long. In this connection the following story from the boundary dispute may be told. According to the rule that water-divide = boundary, this valley would have gone to Chile as well as the Aysen district. But Argentina put forth the following impressive facts: it was already colonized (there was a scheme), one could point to the Casa Koslowsky (a wooden hut) on the map, and last, not least, there was a photo of the telegraph-line there—this telegraph-line I have myself seen on more than one Argentine map. At the house there are fourteen telegraph-posts, with a wire coming from nowhere and going nowhere; inside is apparatus

that never spoke and piles of paper strips on the floor. By the award Argentina kept all the valuable part of the valley.

It was December 8 when, in company with Mr. Espersen, we started to cross the pass along the east slope of Meseta Guenguel and descend to the large depression where Lake Buenos Aires extends—the largest of the Patagonian lakes. It was an agreeable ride in bends and turns between the forest-patches. The rise was not so bad but that it permitted us to remain on horseback all the time, and at 3400 feet we reached our highest point; from there we beheld the vast expanse of the lake, with blue mountains behind. In the east the lake reaches the pampas; the western arms penetrate far into the mountains, as far as the edge of the inland ice, with a row of giant summits making one of the most magnificent pieces of scenery of Andine landscape, and culminating in the two peaks San Clemente and San Valentín, the latter with its 13,000 feet being the highest mountain in Patagonia. On the maps as well as in descriptions these mountains are often called volcanoes, but there is no foundation for such a designation; probably they are of the same nature as San Lorenzo, mentioned below.

Lake Buenos Aires has a surface area of about 800 square miles, thus being almost four times as large as the Boden lake. We were sorry not to have a boat, and had to keep along the shore. The lake empties in Rio Baker; as the reader will remember, we were close to its mouth in June. We camped early that day. Quensel and Pagels went to prepare the dinner and I

got time to look at the vegetation. On the sandy banks near the river Fenix, where we had our camp, I found quite a number of species I did not know, of which several had just been described as from other parts of Patagonia. Halle continued his studies in the geology of the table-mountains; here he also found fossil plants.

When we got back Quensel had baked bread, and otherwise made extensive preparations for a feast; that is to say, he had boiled a potful of dried figs, all in order to impress our guest, who stayed for the night. I suspect that he had been used to far better kitchens than ours. The next morning we parted; he went back and we continued along the Fenix valley. It was as if midsummer had come at a bound. The air was oppressive, the sand burnt, the horses dripped with sweat, and every time we tracked a bend of the river the dogs plunged into the cold water to cool their sore feet. Rio Fenix winds in innumerable serpentines, bordered by a green fringe; now it leaves a level plateau free at the foot of the barranca, now it cuts so close into it that one must pass with caution.

We sit half dozing in the saddle, too warmly dressed for a day like this, when suddenly there is a stir. Now and then we have passed a small troop of guanacos, but not even the dogs had taken any interest in them. At once we discover that they have young ones amongst them; the dogs are after them and there is a wild hunt. At first the guanacos gain, the small ones straining every endeavour to keep up with the others, and they show a tremendous turn of speed. Now one falls behind,

the gap between the small one and the fleeing herd widens; the dogs are there: now it is for us to interfere, or they will tear him to pieces and spoil the meat. It is a very pretty little thing, about a fortnight or three weeks old, with beautiful wool like yellowish red silk on the back and with a white belly. In triumph it is brought to the caravan and added to the load. If one can call the meat of full-grown guanaco very eatable, which I maintain is no exaggeration, that of the young must certainly be characterized as delicious; it tastes like the finest veal, and I refuse to tell how much we ate the first time we had it.

Only very occasionally is the guanaco killed for the sake of its meat; on the whole the older animals are seldom hunted, but the younger more often. Their skin is very much appreciated, and is used for the celebrated *quillangos* (mantles), which every traveller who passes Punta Arenas or any of the small ports on the Atlantic is able to procure. Even if he has not time to go on shore he may be pretty sure they will come on board; the deck is soon carpeted with products in the way of fur from Patagonia—guanaco and fox, puma and ostrich, and the valuable otter from the Channels. And every passenger steamer brings with it quite a collection of skins and imitation Indian curiosities, all sold at advanced prices for the occasion. A common guanaco mantle measures ten to eleven square feet, and is made of from thirteen to fifteen young animals. In Punta Arenas it costs fifty to eighty pesos, according to the exchange, for in reality one has to pay in English pounds and shillings. Another kind of mantle is made only from

the soft skin of the head and legs of the full-grown guanaco; it requires a very great number of animals, and prices run high; I very seldom saw these offered for sale. The beginning of December is the season for the guanaco-hunters; they swarm in certain parts of the Andine pampas, and for the most part do a thriving business. We saw their fires on the north slope of the Fenix valley. I have heard there are some game-laws for guanacos and ostriches, but they are probably ignored, for it is hardly possible to maintain any effective control in the vast uninhabited territories.

Hardly had we begun to move again when the next "plucked and roasted pigeon flew into our mouths." It was a small armadillo, a common *Dasypus minutus*. The small armoured ball rolled away, but did not reach its hole before we had it. After a while we caught another. These animals are delicious cooked and eaten cold, or roasted in their hard coats. He who has been lucky enough to try a pig roasted whole in a Scania parsonage can imagine what an armadillo is like. Small baskets made of varnished armadillo, with its tail in its mouth, are among the most common souvenirs brought from Argentina. These animals belong to an order that in ancient times played an important part. The surviving species are dwarfs in comparison with those which lived on the pampas during the Tertiary period, true giants, the armour of which is beautifully represented in the collections of the famous Museo de La Plata.

We had not come across armadillos till we came to the Fenix valley; later on we saw them at times, and

they never had time to get clear, since we knew what they were good for. They live on locusts and other insects, and to judge from the contents of their stomachs there is no lack of such.

The midday sun became too hot for us, and especially for our horses; nowhere was there an inch of shade, but nevertheless we made a halt at the river, off-saddled, and took a rest. We wanted to make tea, but not being used to the great heat and drought, we were not cautious enough in making a fire. In less than a second the grass all round was all ablaze, and the fire rapidly spread with the wind, threatening our baggage, which was instantly taken out of reach of it, though not without some small losses. However, we had to isolate it without delay, and the coffee-pot, the cauldron, and Quensel's waterproof hat sped to and fro from the river, while we at the same time tried to stamp out the flaming tussocks. After an hour's work the danger, which might have had serious consequences, was nipped in the bud.

Further down the river we came upon a sort of peculiar bush-vegetation, well worth being studied, and we stayed there the next day. Accompanied by Halle, I strolled about all day, and went back loaded with specimens. The bushes, fine species of *Lycium*, *Verbena*, and others, were in full flower everywhere in the hot sand; beautiful yellow flowers of *Alstrœmeria pygmœa* peeped out, as well as small spiny cactus with large yellow, red, and white blossoms. I had to find out a method of conveying the prickly things with me, but they landed home in good condition. Between the tussocks many-coloured lizards scurried to and fro, black and yellow,

brown with red and white markings or with a copper lustre—always making me think of Pagels, who entertained an inextinguishable passion for these animals. All of a sudden we would see him stop, jump from his horse, and pursue some speedy lizard, that often was caught in his cap, to be afterwards transferred to an old pickle-bottle he carried in his *maletas*. The bottle always leaked, and when he looked at his treasures Pagels always lamented: "Herr Doktor, jetzt gehen meine Eidechsen *vollkommen* kaputt!"

When Quensel and Pagels, who had been out doing geology and hunting, returned we all took a bath in the river. The hunting had yielded poor results; they had come across some guanacos, but the feet of the dogs were so damaged by the hot sand that not even the young could attract them. By the river were plenty of geese, and with regret we thought of our gun; with the Winchester we got only a scraggy gander.

At sunset it grew rapidly chilly, and the thermometer fell to freezing-point, 32° F., which did not prevent its running up next day to 86° F. in the shade again. We followed the river for some distance, and then took a short cut across the hilly country down to Lake Buenos Aires. Here we chanced among a veritable labyrinth of sand-dunes. We started to look for ostrich eggs, and succeeded in finding two; unfortunately they were addled. Such eggs! The only drawback is that it takes twenty minutes to boil them, and then they are but lightly boiled. The reason we did not follow the river was that it runs east for some miles before turning south, and finally west,

emptying into the lake. It is a rather peculiar river. Just east of its bend another river, the Deseado, starts from a swamp, fed by occasional tributaries from the north; further down other streams join it, and now visible, now disappearing in the marshes, it runs across Patagonia and discharges into the Atlantic. The water-parting between Deseado and Fenix—*i.e.*, between the Atlantic and the Pacific—is very insignificant. Rio Fenix has only just abandoned its old course to the Atlantic, and it was possible for Dr. Moreno to remove some of the morainic material and coax it back for a while. Even now it sometimes sends water to Rio Deseado.

At the east end of the lake there is almost a desert—dry, stony plains where the few plants look like monsters, to such a degree have they adapted themselves to an abnormal life. One is agreeably surprised when suddenly the canyon of Fenix river opens at one's feet; there is luscious green grass; the horses betray delight at this sight, and it is easier than usual to drive them down the steep barranca. We made our camp not far from the outlet of the river, where traces of one of the encampments of the Boundary Commission still remained.

Our supply of meat was finished, the dogs had to live on their own fat—not much to speak of—and we made inroads upon our poor vegetables.

A cool breeze from the lake welcomed us as we rode out of the canyon to go round the east end of the big water, and the waves broke in over the shingle, which was adorned by large-flowered yellow œnotheras. I have seldom seen anything more inanimate than nature

here. There was not a bird to be seen on the water, not an animal in the ravines running down to the shore from the south; here and there white guanaco bones gleamed in the bushes, but not a living thing was to be seen. We made a halt in the canyon of Rio Chilcas and camped. A rumour had spoken of fossils having been found there. Quensel and Halle were busy looking for them; I myself spent the time as usual, and Pagels tried to replenish our pantry, but he returned empty-handed, and supper was identical with breakfast —pancakes of wheat-flour and water!

On the north shore of the lake there is a small settlement that we did not see; otherwise the whole region is uninhabited, in spite of the good grass along Fenix and south of the lake, which lies only 712 feet above sea-level, for which reason the winters cannot be very severe. An abandoned *rancho* not far from the Chilcas valley showed that people have lived here for some time. The geologists' efforts proved futile, which did not surprise them; the kind of rock was not promising for the discovery of fossil remains, and we resolved to leave the place and move our camp to Rio Jeinemeni, which we were to follow to a pass across the mountains. We left the lake, but enjoyed a last sight of it, following the shore at some distance, and higher up making for Rio de los Antiguos, which runs parallel with Rio Jeinemeni, and the canyon of which we should have to cross. We rested an hour near some lagoons, and in vain tried to get some birds—there were numbers of black-necked swans and ducks, but the swans kept far off from the shore and the ducks hid themselves in the

reeds. At random we cut across a plateau to reach the river, and there we had a narrow escape. Arrived at the edge of the canyon, we saw the river whirling below, and the barranca was about 450 feet high. How were we to get down? A safe method would have been to follow the river down and cross it near the mouth, as we could see from the map that it must be more fordable there; however, this meant loss of time and did not suit us. We experienced the truth of the proverb "More haste less speed." We rode to a point from where we got a view up the valley, but nowhere could we see a passage; all along the barranca fell away almost vertically. Just below our feet, however, was a sandy slope with some bushes, falling off at an angle of 45°; what came after we could not see, the rest of the barranca being too steep to be visible from where we were. But Pagels assured us that he could see a "very good place," and we started to slide down. It went all right for a while, though it was, of course, some time before we got the horses to understand what a fine way we had found for them. Our delight was of short duration; after a few minutes we found ourselves at the top of a hard, nearly vertical sandstone wall without the slightest trace of vegetation. To turn back was out of the question. Fortunately the mountain here is furrowed by small streams during the spring floods, and there was nothing to be done but climb down one of the ravines, where stones and loose blocks, plunging down at the slightest touch, made the descent very risky. We had hard work to force the horses down the ravine. It was so narrow (the section was V-

Fenix River.

Valley of Antiguos River looking south.

shaped) that we had to crawl in single file. Repeatedly a horse would dash at the sides; instantly he had to be driven back, or he went to certain death. Step by step they were literally whipped down, sliding and falling, stumbling on treacherous blocks; the whip brought them to their feet again, and one after the other landed safely in the thickets at the foot of the barranca. Pagels had remained behind to look for Ruckel, who on this day was carrying tent and provisions; he had refused to come with the other horses, and disappeared in the bushes to find his own private way down. Quensel and Halle climbed up to see what was going forward, but I found waiting tiresome, tied the horses, and climbed the wall following another ravine. I had come half-way when I stopped and shouted, but did not get any answer. I could see nothing; climbed down again and walked along the foot, and suddenly a dreadful sight met my eyes. Half-way up the wall, at the end of a small ravine ending abruptly, stood Ruckel, with his load hanging loose, his legs entangled in the ropes, trembling from head to foot, and without the most microscopical chance of getting up or down, to right or left. Straight above him on the slope were my comrades. How had he got there? He had fallen, tumbled down sideways with load and all, rolled about 90 feet, and was lucky to recover his foothold at the very last moment; another inch and he would have been dashed to pieces. Halle and Quensel had seen him fall, and hastened up to end his sufferings with a merciful bullet; to their immense surprise they found him standing upright. The small space where he was able

to keep on his feet sloped down; at any moment his strength might give out and he would be precipitated down and probably killed, for below him the barranca sloped *inward*. There seemed nothing to be done. I climbed up till I stood under him; the ropes were cut and the things lowered down to me, and I carried them down. As far as we could see the beast was not much injured, and was only bleeding very little, so we of course wanted to save him. Just below him, to the left, a small ridge protruded; could we get him across it, there was a small ravine leading down. Lying on his stomach and clinging to the projections on the rock in a manner hardly believable, Pagels dug some steps in the sandstone with my sheath-knife, Ruckel regarding him immovable as the Sphinx. Pagels crept down, tugged at the *cabresta*—well, I hardly know what happened; some rapid steps half in the air, an instant he lay floundering and kicking with his belly across the ridge, then was dragged into the ravine and saved! Rubber must have gone to the construction of a good deal of his body, for the following morning he was not even lame. Ruckel had celebrated Lucia Day in his own original way, and now we could laugh at the adventure. When we looked at the barranca from below we could hardly believe that we had come down there. The affair had cost time, and we saw ourselves forced to camp at Rio Antiguos, where another unsuccessful shoot forced us to continue our pancake diet and the dogs to go with empty stomachs.

We were off early the next morning, for we wanted to cross the river when there was not so much water as

later in the day. It was easier to climb out of the canyon than it had been to get into it, and so we went on to Rio Jeinemeni. This river is the frontier between Chile and Argentina. We thought the best way to the pass would be to follow the bank of the river, and therefore climbed down into the magnificent canyon. There was a stony strip of land along the water where we could ride, but owing to the innumerable turns one could not look ahead for more than a very short distance at a time. We had not been under way long before we had to alight and lead the horses. Now the barranca sent sharp ridges out in the water, where a false step would have been fatal; now we came across heaps of blocks and *débris* fallen down from the wall, now deep ravines, to get across which one almost needed trained circus horses; if one risked remaining in the saddle, one hardly escaped getting literally torn off by the tough ñire branches. We sent Pagels ahead to signal if any serious obstacle appeared. All of a sudden a barranca ran almost vertically down into the river, leaving a passage about two or three feet broad. Some bushes increased the difficulties. Steady! The mare looks at the water, but it does not seem very inviting. Then she throws a glance full of unsatisfied desire towards the sky, but 90° was evidently too much for her, and anxiously squinting at last she walks the right way, followed by the other party in single file. Suddenly full stop! Pagels has stopped to clear away some bushes; we shout to him to hurry up, but it is already too late. Jeremias has taken the lead. With firm resolution he turns right, crosses a branch of the river,

and lands on a sandbank, where he stops looking more stupid than ever. Evidently the mare finds his idea brilliant, and plunges after him, and the other loose horses are not behindhand in following their example. We caught one of the packhorses before he had time to carry his evil plans into execution; but the other, Manasse, was already in the middle of the rapid stream, and with mixed feelings we saw the water washing his load. Fortunately he carried the cases. There was no time for cogitation; once out in the main branch Manasse would probably have perished. Pagels hastened after the fugitives and brought them back. It was a narrow escape; we might have lost valuable collections, journals, and note-books. The going was wretched, but we continued up the river till the barranca made further progress absolutely impossible. We climbed up about a thousand feet to try if it was not better up there. Pagels was sent ahead with the Winchester, and a deer really came within range; however, the distance was great, and though hit the animal did not drop, but rushed down the slope and fled into Chile—that is to say, he swam over the river, where he fell down dead. The dogs rushed after him, threw themselves into the water, the current took them, and they were hardly able to reach the shore. We did not know if there was any ford; at this hour of the day the river looked like boiling mud, and it was not without risk to try to wade it. However, Quensel, on Flax, the most reliable of our horses, offered to try, and Halle and I drove the troop to a suitable halting-place. Pagels stopped at the river to help Quensel. Half an hour

passed, one hour—we began to get anxious and walked down the slope, and were glad indeed to meet them, Flax carrying a pair of substantial deer-steaks on the saddle. Quensel had got a bath in the river and had had a narrow escape; he declared that with any other horse he would not have been successful. "You will never see Pavo any more," he added. We were very sorry at the loss of the dog, but at the same time glad that nothing worse had happened—and our sorrow did not last long, for whom did we see after a while, lumbering up the slope, but Pavo, exhausted and dripping with water.

It had grown late. Quensel's clothes were soaked, and we resolved to camp on the spot, in spite of the fuel being very scarce and the water bad. We had to fetch it from a small pond so full of tiny crustaceans that it turned quite red when boiled. We had a great feast of venison, and both ourselves and the dogs enjoyed a hearty meal. We also found time to prospect for the next day, and saw that we must keep high above the river; it was a mistake ever to try the bottom of the canyon. We resumed at a height of from 2200 to 3000 feet; it turned out all right, and we camped at Rio Zeballos, at 3300 feet, the largest tributary to Jeinemeni, in the most inviting, dry, fragrant roble-forest. We had a cold night and there was thick ice in the coffee-pot when we rose. The horses enjoyed the fresh mountain pasturage, and Quensel and I employed the day in an excursion on foot up into the mountains. We soon found a guanaco-track that we could follow for more than a thousand feet. Now and

then a guanaco was seen, and once we sat down and remained immovable, I with the camera. Making smaller and smaller circles, one approached, stopped now and then, gave a neigh and pricked up his ears. He felt some anxiety, but curiosity overcame it, and I snapped him from about a hundred feet. Later we tried the same manœuvre with a fat deer, but I wanted to get closer, and he was frightened and made off. Above the forests we climbed over rattling heaps of loose slates; numbers of charming Alpine plants were in flower among *débris* and snowfields, and from a crest of 5700 feet we had a splendid view: to the east the mighty basalt-covered *meseta;* to the north we cast a last glance at Lake Buenos Aires, where the smoke from the guanaco-hunters' camp was still visible; to the west deep, forest-clad valleys and summits, not yet found on any map; to the south the Zeballos pass, our battlefield for the coming day. We felt monarchs up here, as if these immense Alps, the snowdrifts, flowers and noble animals were our property. Never is the sense of freedom greater than in the high mountain air with a good expanse of the earth below one's feet. Down we went, faster than we had come up; we slid down the steep, loose heaps of stones, half ran through the mountain swamps where red-brown geese had their nests, and dived into the forest. Only Pavo was in the camp when we arrived there. Later Pagels arrived with some guanaco-meat; he had been on the *meseta* where our way led, and said that he had surveyed a beautiful track for the march. We received this not uncommon information with equanimity, born of long experience.

CHAPTER XIV

LAGO BELGRANO

On December 17 we crossed Rio Zeballos and climbed the east side of the valley. Pagels was very proud of the route he had planned, but his self-importance began to diminish when we came to one swamp after the other and had to go round them. The small streams were numerous, and had, of course, cut deep ravines, over which we could hardly force a way between blocks and thickets; at one place we had to be very careful, but the horses managed it very well indeed. The ascent up to the pass was better than we had been used to, and we reached the highest point at 5000 feet. Large snowdrifts were still left, and the ground was very soft. Round the pass are several well-marked peaks looking like sentinels, one of them also bearing the name of Cerro Centinela. Our way down was longer and gave us more trouble than we had counted upon; we had been in the saddle ten hours before we saw the first few bushes and could obtain a little shelter behind some rocks at the bend of Rio Gio, close to the Chilean frontier. The weather had turned out stormy, and a strong wind blew, making it rather difficult to cook the dinner, while the rain pelted down as it can only pelt in Chile.

Our original plan for the summer had also included a visit to the *estancia* of the Baker Company, whereby

we should get another section through the mountains; but in consideration of the little time we had and the scarcity of provisions we gave it up and rode straight south, seeking our way through the winding valleys down towards Lake Pueyrredon, where we camped in the last forest-patch on the slope of Cerro Principio. The dogs had just captured a fine young guanaco, and we made a big fire of ñire branches. The fire was indeed necessary, for it was cold and snowy.

The landscape north of Lake Pueyrredon is peculiar enough—an endless row of canyons cut down along old cracks, crossing each other in all directions or ending blind. Sometimes one could not see a hundred feet ahead, and one of us always had to ride in advance and survey the ground, otherwise the caravan would have found itself suddenly in a cul-de-sac. Often we passed half-dried or even dried-up salt-lagoons. Guanacos were plentiful, and from a side valley a hind with her young quizzed us, but soon disappeared when the dogs started in chase. On the shore of the lake were many geological features reminding one of the west coast of Sweden —the same round, ice-polished rocks with beautiful glacial striæ, showing that the basin of Pueyrredon-Posadas was once filled by an immense glacier. Seen from above these lakes present a very remarkable appearance. A narrow neck of land, where high sand-dunes are piled up by the frequent westerly gales, separates them; the more shallow Posadas looks bluish green, the Pueyrredon dark blue. According to the Argentine maps, Lake Posadas lies 367 feet, Lake Pueyrredon 364 feet above the sea-level; the former

empties into the latter by means of a short, deep, rapid river, which in our journals is called Rio del Istmo. The outlet of Lake Pueyrredon is Rio Baker.

It is not possible to wade the river—that is to say, with packhorses. However, there is a ford outside the mouth in Lake Pueyrredon, where a sandbank has been formed over which the waves break heavily when there is a high sea. It runs in an irregular bend, and it is far from advisable to leave the horses to themselves in crossing. The evening we came to the ford it looked bad, for there had been a gale of wind all day and the surf was heavy, but we were not at all inclined to put off the passage. The soil is very barren here; there are some bushes and halophilous plants, but not much grass; we were afraid that the horses would wander all night, and could hardly imagine a worse place than this for looking for them. For safety's sake we put *maneas* not only on the mare, but also on the roisterer Vingel, who often led her and the rest of the troop into forbidden ways, and then sat down round a big blaze of driftwood. We had found half a dozen duck's eggs, and were greatly disappointed to find that they had been sat on; however, we could not bring ourselves to throw them away altogether, but took out the chicken and used the rest of the yolk in the pancakes. Don't throw away an egg till the chicken has absorbed it all—it is always good for something.

The murmur from the sea increased at dawn, and when we had brought the horses down among the heaps of driftwood we saw that the surf was at least as bad as the day before. Nevertheless we made up our minds

to try, leading the packhorses. Certainly they did not plunge into the water willingly, but were very frightened at the thunder of the breakers, and it cost us much trouble and the horses sore hides. Everything went off all right, though we of course got wet and the loads also received some showers. We had just waded in water, now we had to flounder in sand along the sides of the dunes; sometimes they were so steep that we preferred to plunge through the shallow reeds of Lake Posadas. The southern shore is very different from the northern. The mountain here rises straight out of the water to a giddy height as seen from below. One feels oppressed, shut in on a narrow, stony strip of land, where a stream coming from a deep canyon has split up into an extensive delta, and one even wonders how one shall get out again. There is only one answer: Climb!

Halle fell behind in order to survey the canyon, where different strata were well exposed, and the rest of us climbed 2200 feet in zigzag, and sometimes not only the horses were four-legged! On the plateau we halted and waited for Halle. Then we crawled along a very steep, stony ridge separated by a jagged crest from the valley of Rio Tarde, through a natural opening at 3600 feet coming down into this valley. The landscape was very desolate—yellowish-grey rocks cut by innumerable ravines not marked on the map, and much worse to cross than big valleys. The patches of vegetation were swampy, and it promised ill for the night, till suddenly, a couple of miles ahead, some forest-groves were seen—evidently the most easterly in this

part of the country. They lay beside a tributary of Rio Tarde and we soon had a roof of foliage, dry leaves to sleep on, a grassy slope below for the horses, a bank of fossil oysters close to and snowy mountains all round. What more could we ask? Here was everything. Some rusty tins showed that the place had been used as a camp before; surely they had been left by the Argentine Boundary Commission, for one of them had contained preserved asparagus.

We stayed here one day in order to give the horses a chance to recruit their strength for the march across the next mountain-pass. As our next goal we set ourselves nothing less than Lago Belgrano itself, and indeed actually got off before eight o'clock. Now the reader will think us a band of real sluggards, but I must protest against such an idea, for as a rule we never rose later than six o'clock unless we had gone to rest quite exhausted the night before, and very often it was only five o'clock when we crept out of our bags. But all the work that had to be done before we could spring into our saddles took much time. We had carefully studied the map and chose another route than the one followed by the engineers of the commission, to some extent shortening the distance. It was wild and desolate up here at a height of 5600 feet, gigantic basalt pillars lifted their hard black bodies on both sides, and large snowdrifts fed the boggy, sliding soil. The slopes, nearly without vegetation of any kind save some monstrous plants in the shape of compact balls, are coloured red, brown and grey, and Rio Belgrano rises like a red-brown mud-puddle. A chilly fog enveloped us and shut out the

view; only the nearest mountain, the fine Cerro Belgrano (7500 feet) being visible, cutting the veil with its worn peaks. The pass fell abruptly on the other side making us hesitate for a moment. The river makes innumerable turns and bends, from all directions tributaries flow in; we saw no other way than to keep to the bottom, every five minutes crossing the river in order to take advantage of the narrow strips of muddy shore separating the barranca from the water. We made very slow progress, the horses were tired and often refused to cross the stream, but nevertheless we should have reached the lake if fate had not led us to arrange a great Christmas slaughter.

We wrote December 22 in our journals and had hardly a piece of meat in the pantry. We had just crossed the river and were about to round a hill, separating us from the Belgrano basin, when we caught sight of four deer, two bucks with their hinds steadily regarding us and shaking their little stumps of tail as they uttered their peculiar cooing note. We tied the dogs up and approached them with great caution. One of the bucks was badly wounded by a bullet, but nevertheless rushed down the slope at full speed, the other got a broken shoulder and did not move. We went up to him but he stood quite still looking at us with his large, intelligent eyes, the blood slowly dripping down on the flowers of the heath. We wanted to give him his *coup de grâce*, but in spite of one bullet in the head and one in the chest, he suddenly showed a spark of life and rushed down to the water. We let the dogs loose but instead of making for the wounded bucks they

The Belgrano Pass, with giant basalt pillars.

West Arm of Lake Belgrano.

brought one of the hinds to bay at the river and Pavo buried his teeth in her throat. As a rule we only killed bucks, but of course had to kill the hind in this case. Now we had to look for the bucks. Pagels and I went down to the river where one of the bucks, wild with rage, lay struggling with Pavo, who had bitten him; we let the river carry him down to a place where it was possible to land him. It was resolved to camp close by, and a horse carried down the meat of this buck. Pagels and Quensel went to take charge of the rest. The buck still lived and butted round him; he hit Pagels and knocked the knife (my bowie-knife) out of his hand into the river, where it disappeared for ever. At nightfall we had finished the bloody work; we had two hundred pounds of good meat, more than sufficient for our stay at Lake Belgrano.

In the morning we rode down to the lake. The horses had very heavy loads, but the road was only nine and a half miles long and, with the exception of some swamps round the west arm of Rio Belgrano, easy enough. Just as we came down the last slope we discovered the tracks of shod horses. People here? Some expedition perhaps, looking for a camp? Now two parallel lines appear; there is no doubt that a cart-track leads down to the lake. And when the view opened out with the glasses we could make out a tent, horses and men. It was almost a disappointment—had civilization reached this last great tract of Patagonia? "And I, who hoped that we should celebrate Christmas by ourselves," said Halle with a worried air.

The peninsula had been shut off by a fence and we proceeded through a gate, the "strangers" gathering in front of their tent. We alighted and walked to greet them. Their appearance plainly told us, that they were not children of the country, but "gringos," and we asked them if they spoke English or German. "Wir sind deutsche Kolonisten, und Sie?" They gave us a hearty welcome, and our thoughts coincided in a "now we'll celebrate Christmas." By-and-by they told us about themselves and their enterprise. A newly formed company, called Sociedad Germano-Argentina, had got a concession of about 1200 square miles of land from Lake Posadas to Rio Chico, on condition that it brought colonists from Germany who promised to devote themselves to cattle-raising and agriculture. Two of our new friends had a share each and were out looking for a suitable piece of land in order to buy it. The manager, C. Högberg, a Swede and late captain of a ship, was only some days' journey from there and was expected after Christmas. The Germans had not made up their minds as to where they wanted to settle in earnest, but thought of stopping for the winter on the lake, to see what the unfavourable season was like. It is a doubtful question whether this part of the country is fit for either of the purposes mentioned above. The lake is situated not less than 2570 feet above sea-level. The stony peninsula, connected with the mainland to the east by a very narrow neck of land, produces the impression of being barren and weather-worn. I can see but one great advantage: it does not need to be fenced in. Probably the winter is comparatively severe

and the summer short with early night-frosts. I do not think the colonists will stay long here. The communication with the outer world goes over San Julian, a distance of 220 miles as the crow flies. The land round Lake Belgrano is certainly not especially good, and what it is that has fixed the attention of the colonists just upon that part I am unable to understand.

The Germans complained that they were short of meat, and we were glad to give them some of our ample supply. There were deer on the peninsula, but the Company wanted to spare them. In return for the meat they gave us white beans and lentils; we were very short of vegetables: the oatmeal was finished and our possibilities of making pancakes had become sadly limited. Of rice alone had we a sufficient supply.

Lago Belgrano has been the starting-point for the mapping out of several lakes, the acquaintance of which we shall soon make. The landscape belongs to the most beautiful in Patagonia, and I defy anybody to show me mountain scenery more varied and grand than that west of the Azara-Nansen basin. A very promising field for work attracted us thither.

Our first thought was to find a good camping-place, and as we intended to make a longer stay than usual, it had to be chosen with care. In the ñire forest on the east side of the peninsula we found one satisfying all our demands, cut some bushwood and fixed up our tent, above which the Swedish colours floated. One of our most important tasks was to make a boat journey and penetrate westward into the mountains. We knew that the boundary commission had left a canvas boat,

and the Germans told us that there were two of them, a smaller and a larger, and indicated to us where we should look for them. Halle stopped at home, the rest of us went to find the boats. We had not gone far before we saw a blockhouse in a grove. In the Koslowsky valley we were told that the commission had spent a considerable time by the lake, and that various things were left there, among others preserved foods. The hut was shut up; but an opening in its hinder wall was only stopped with branches and one of them being loose it was the work of a second to get into it. I will specially emphasize that we were in the uninhabited mountains of Patagonia with failing provisions, so that the reader will be able to overlook what now happened. In one corner there was a barrel of wine, and four wooden boxes. Some instruments for making charts were fixed under the roof. That this had belonged to the last commission, which had put up the boundary marks, we did not doubt for one instant, and our hypothesis was strengthened when we opened the boxes and saw their contents: tinned provisions, also some luxuries, tobacco and any amount of cigarette papers, barometers and thermometers. One of the boxes contained nothing but Jamaica rum. We felt happy enough—this was indeed the hidden treasure of a fairy-tale. The Governments of both Chile and Argentina had promised us their help: I declared myself ready to take the responsibility for robbing the depot, and we picked out a selection of provisions, especially in view of the boat-trip, since we carried scarcely anything suitable for that purpose. Even

the Christmas brandy, a bottle of rum, we let the Government present us. We made a list of the stolen goods to be sent to Buenos Aires, nailed up the boxes and effaced the traces of our visit. We found it unnecessary to tell the Germans about it. Possibly Captain Högberg, once a member of the commission, had the keys; but it was less probable that he had let the colonists into the secret.

We soon found the boats; one had been fixed under cover some distance from the shore, but it was so large that we could not think of using it. The other lay without any protection on the beach, it was a non-collapsible eight-foot, rather the worse for sun, wind and weather. Probably it had not been used for years. We tried it and found it leaked terribly. It was not easy for us to repair it, for we had no materials, but some grease in the joints and on the canvas made it serviceable enough, though the man in the stern was kept busy all the time baling out the water. Heavily laden with the "Christmas gifts" we returned to the tent. Halle was at home writing: we opened the door a little and threw in a tin: "Do you want some butter for Christmas? . . . or perhaps milk? . . . a piece of cheese doesn't taste bad . . . here, too, you have an ox-tongue." And at last, shaking the bottle: "I think we'll have some grog to celebrate the day." I have seldom seen a person look so absolutely at a loss; he wouldn't believe it, and it took him a long while to grasp the situation. It almost looked like a conjuring trick. The poor "extra" tins we had bought in Aysen quite faded into insignificance in

comparison with all these new dainties; now we were prepared for the double festival on the Southern Hemisphere—Christmas and Midsummer's Day at the same time.

The menu of the dinner on Christmas Eve was as follows:

Hors d'œuvre.
Coeur de cerf sauté avec des légumes.
Figues au riz avec du lait.
Thé.
Grog au rhum.

We were dangerously near gourmandising. I would not say that the discovery we made the next morning, viz., that the things we had taken could not belong to any boundary commission, but to the employees and engineers of the German colonizing company, helped to the digestion of the strange dishes. The date on one of the tins had revealed the truth—we had just committed burglary. However, it was done and could not be undone. I wrote a letter to Captain Högberg explaining matters and offering to pay for what we had stolen; in Punta Arenas I got an answer in which he declared himself happy to have been of assistance to some of his countrymen, and thus everything was all right. We still feel indebted to him.

Breakfast on Christmas Day wasn't bad. What do you say to pancakes with gooseberry jam; the latter honestly acquired too, in Aysen, and coffee with bread. We had had a baking for Christmas. In the evening we accepted an invitation to visit the Germans. They were nearly as poorly off as ourselves, but had one thing that

we could not even dream of—a barrel of wine, and round it we sat having a merry time. At night they came to have dinner with us. It was a proper Christmas, and during the night it even snowed in spite of its being midsummer. Probably this was a special attention paid to the Swedish visitors, who knew how to appreciate it. Then we had enough of feasting. All Christmas Day we had done no work. On Boxing Day we wanted to start our boat-trip, but it blew too hard in the morning and we had to wait till the afternoon before we could venture to set out. Carefully we packed the sleeping bags and provisions for some days and more carefully still we placed ourselves in the canvas boat, Quensel, Pagels and I. There was not much of the gunwale above water.

Opposite us, on the south shore, the mountain-scenery was splendid, reflected by the clear blue-green water; down below green slopes with brown patches of heath and yellow straps of sand, then a steep mountain wall with multi-coloured *débris* and yellow, red and violet tufa-layers; on the top of them a black jagged crest of slate, split up into crags, sharp as needles, where white snow still lingered here and there. We kept close inland, and reached the narrow West Arm; the current in the entrance is very strong. The evening was squally, and we soon had to land for the night. The morning arrived with a fresh breeze and the sea ran so high that we could not sit three in the boat, but Pagels pulled along the shore, Quensel and I walking on foot. It was not long before the wind increased and both we and the boat landed in a small bay. The great difficulty

in navigation on Andine lakes is the persistent westerly wind blowing without cessation.

We had camped early in the day. From a hill we could see the depression of the lakes Azara-Nansen. They are completely shut in by snowy ridges, and the brooks keep their waters at a nearly constant temperature of some few centigrades above zero. The hour of liberty did not strike that day, and our spirits fell indeed when we rose with the same wretched weather. At noon the wind abated, and in the evening we went forward. Quensel and I walked as long as we could when Pagels took us on board and we landed happily at the short river, where a waterfall empties Lago Belgrano into Lago Azara. Here we had to carry the boat and things over the hills; the cascade has a fall of twenty-six feet in a distance of only 700 feet. We continued at once to the next beautiful lake, now smooth as a mirror. Wanting to get as far west as possible we turned off into the long narrow western branch, the mouth of which is very shallow and almost barred by thousands of big logs from the forests round the lake. Already in the west part of Lago Belgrano, the forest-patches closed to a thick covering, and all the slopes were quite hidden under a dense forest. We had to pass the entrance on foot, and Pagels was hardly able to get through with an empty boat into the calm water, which the reflections from the high mountains painted black-green. We did not mind the dark, but wanted to get on as long as it was calm, but hardly had we agreed to do so when the first puff of wind came rushing along, followed by others stronger and more and more

German Colonists, Lake Belgrano.

Breakfast Table on Christmas Day, Lake Belgrano.

frequent. In haste we had to seek the first landing-place we could find where it was possible to haul up the boat. In order to find a place to sleep in we groped along in the darkness and climbed up into a narrow crevice; sixty feet above the water we found a nice little shelf just big enough for the sleeping-bags. If one regards this place from below it is impossible to see that there is a camping-place in the middle of the very mountain-wall.

Now and then we woke up from sheer curiosity. Really, we thought, it is getting calm again. At 4 A.M. we got out, rolled up our bags and hastened off, in the lovely weather, every peak standing out distinct and towering against a cloudless sky. Not only the vegetation had undergone some changes. Quensel looked at the rocks now and then; we landed and he knocked off a piece; the backbone of the cordillera, the granites, appeared once more. After some hours pulling we reached the innermost corner, where we breakfasted on the sunny beach to the music of a small waterfall. We followed the stream up to its origin, a charming little lake without a name on the map, but by us called Laguna Joya (the gem). In order to profit by the day we made an ascent. The ground here is very uneven, up and down over mossy rocks and forest-covered ravines, but we made good speed and finally freeing ourselves from the last embrace of the twigs had the forest below us. Over rattling stones we climbed Cerro Aspero till we reached the foot of a large glacier covering the summit; only the sharpest peaks, from which the ice glides in frozen cascades, peeped forth. We have not seen many bits of scenery equal to the one seen

from here. The camera clicked, but certainly gave no idea of the colours. South and west of us we had the high peaks close by, shutting out the view in these directions; but to the north like sparkling gems on a dark green cloth lie the lakes, a small sapphire-coloured corner of Lake Azara, the lakes Mogole and Peninsula showing the tints of amethyst and emerald. Beyond, summit after summit rises, in all directions with large glaciers giving birth to milk-white rivers winding through yellow moraines. Farthest north, majestic and commanding, Cerro San Lorenzo reigns over all, with its 11,000 feet, one of Patagonia's highest mountains and so steep that one really wonders how the glaciers are able to cling to its sides. To the west the inland ice gently wraps its sheet over Cerro Blanco, shining like silver and gold in the strong noon-tide light. It is a long distance to San Lorenzo, but nevertheless we can see that its geology is different from the surrounding lower mountains. Probably all the highest summits, such as San Clemente and San Valentin are of the same laccolitic nature. At the foot of Cerro Blanco we catch sight of a small lake, not marked on the map and probably never before seen by anybody. We almost ran down, for we must make use of the fine weather. In haste we gobbled some food on the shore and said good-bye to Lago Azara. It was midnight when we reached Lago Belgrano. In the whirlpools below the cascade we were near to coming to grief, but Pagels' seamanship saved the situation. In the morning we carried the boat across and were back in our own lake again. This time we took the way north of the penin-

sula, where the lake is rather narrow. To our surprise we found it so shallow that we could hardly pass, owing to Rio Lacteo carrying down masses of mud from the glaciers on San Lorenzo. Further east we got into deep water again and in the afternoon of December 30 were back in our camp. In the evening we had a notable visit from two Tehuelche Indians, for the time staying with the Germans. Silently they sat down before the fire, but when they had drunk a cup of cocoa, a beverage rather unknown to them, they loosened their tongues. They were brothers and indeed such a pair of fine fellows to look at that we could hardly conceive that they really belonged to the last remnants of a dying race. To see them mount a bucking, unsaddled horse, on which they sat like wax, was pure delight. We spoke to them about the route we had taken from Lago Pueyrredon there, but they did not at all approve of it. Why should people endure such hardships when they could gallop round those troublesome mountains? Our dinner was now ready, and we invited them to partake of it; they protested saying that they had just had theirs; but nevertheless two plates of beans and deer-steak went down. Bidding us farewell, the elder said: "We shall give you some veal, and it is very fat." We thanked them and gratefully accepted the offer.

New Year's Day had been fixed for the start. Halle had made long excursions to survey this region and had obtained very good results. On New Year's Eve we stayed at home and worked hard to get ready; we had to make bread, write down our observations, pack the

collections and, last but not least, mend our clothes, which by now were almost fit for a museum. Halle had struggled with his trousers a long time—finally they exhibited a mosaic so cunning that it might have done for a tailor's trial piece. At sunset all was in order. The Germans had been kind enough to remind us that there was still some wine left, and soon we sat down in the old blockhouse, Swedes, Germans and Indians. It was cold, but we had a merry fire, and everybody was armed with a mighty tin mug of hot wine; we spoke of our homes and old songs were sung. When our watches showed midnight our revolvers rang out, the roof was lifted by our loud New-Year-Greetings, the dogs took up the cry and with a little ring-dance we welcomed 1909. The Tehuelche boys laughed till their beautiful white teeth shone.

New Year's Day, 1909. We struck camp, the flag was lowered. Wild after the days of liberty the horses strained against the ropes of our corral. We halted at the camp of the Germans to bid farewell to the good fellows, and then we gave the horses a free rein, left the peninsula and rode up in a valley between the hills. Here we stopped one moment and turned round to give a last glance at this charming picture, to which many of our merriest Patagonian remembrances are attached. The surface of the lake disappears, the last peaks sink behind the hills, we are on the high pampas, where the flora shows all the beauty of midsummer. For a moment we gather round map and compass, get a direction, and at good speed the caravan trots over the steppe-plains.

CHAPTER XV

LAKE SAN MARTÍN

There are two different routes to follow from Lake Belgrano to the South: one westerly, more inviting from some points of view leading as it does through inaccessible parts of the cordillera, here called Sierra de las Vacas, and one easterly along the rivers Belgrano and Lista. But the high passes would probably be so deep in snow that we perhaps should not get over; in any case they would require much time, and time was valuable, as we did not know how long we should have to stay at Lake San Martín. Further, the easterly way would probably give better results for geology and botany, and this circumstance determined us.

Over blooming pampas, where steep hills rising fifty to a hundred metres above the level ground, and numerous lagoons make the scenery rather pleasant, we rode down the cañadon of Rio Robles which we followed down to Rio Belgrano, our old acquaintance of the time of our march down to the lake. We crossed Rio Belgrano and then, with some difficulty, because of the depth and the strong current, the two joint rivers. Here my horse, Johansson, nearly succeeded in playing me a bad trick. As I did not want to get wetter than was necessary I drew my legs on his back, and probably touched him with one of the spurs; anyhow, he got wild

and tried to throw me off in the middle of the stream. Certainly it would not have been very pleasant had he been able to carry out his intention, as it was I only lost my rebenque (whip) and got soaked to my waist, but the fresh pampas-wind soon dried my clothes. We had just crossed this river and were trotting along again, when, to our surprise, we discovered a caravan further down—but alas! on the other side. We supposed that it was Captain Högberg, and were very sorry indeed that we could not stop, but we had a long march before nightfall and thought it would be too troublesome to cross the river twice. Had we only been able to see the troop before we crossed the temptation would have been too strong—one does not meet compatriots every day in the uninhabited parts of Patagonia.

We had to search well before we found a camping-place that satisfied our needs. Everywhere there was plenty of grass and water, but no fuel. When we unsaddled our horses we discovered that Jeremias, whose back had been bad for a long time, now looked terrible. We had thought that after the rest at Lake Belgrano he would be able to carry his load again, but his old swollen wounds had broken open and were full of matter. His job from this day was to act as watch-horse in the night—and during the marches to lead the troop astray and thus cause our riding horses a lot of extra work.

The next day we continued along the valley of Rio Belgrano, until we found a good pass where we could cross the ridge and descend into the valley of the rather large river, Lista, which drains the Sierra de las Vacas by means of numerous tributaries. At the point where

we struck the river it is divided into many branches, which constantly shift their course over a bed of shingle. The last one was so deep that the loads only just came clear of the water. The Lista Valley looks very fertile. Unfortunately this region as well as that through which we rode on the following day lies so high above sea level that the winter is generally too severe for both sheep and cattle. An old abandoned *rancho* close to the Rio Ñires, where we camped on January 2 showed that colonisation had been a failure. But why not make use of all this fat grass above the sea as we do in Switzerland or in Scandinavia? The system of mountain dairies, used only in the summer, will probably reach Patagonia also in time.

The rivers Belgrano and Lista belong to the Atlantic system; they run to Rio Chico, a river anything but small as the name denotes, which empties in the same estuary as Rio Santa Cruz. A few miles south of Rio Lista we passed the ridge which forms the water-parting, and set our course for the valley of Rio Ñires. The name of this river did not sound very promising, and I have never seen brushwood which was denser. For long stretches the stream was not visible, and one had to search for a place where one could get down and fill the pot with water.

The next river had a still more discouraging name: Arroyo Tucotuco. And on the map the valley was marked as one extensive swamp. We walked carefully along, crossed the sources where they emerge out of narrow canyons and followed the valley south of the stream. It was indeed a charming place; we had a

small strip to keep on: a few steps to the right and the horses sank down into a bottomless swamp, a few to the left, and the ground was completely undermined by the tuco-tuco. Having passed a small tributary, called Arroyo Potrancas on the Chilean map, we soon met with dense forests. Only round the swampy brooks was there a space of clear ground, but we soon got tired of groping our way and turned at right angles into the forest. Abraham made the most energetic attempts to carry away the trees—a horse never learns that his pack makes him broader—and we had to be very watchful to release him, stuck fast as he stood between two stems, with a most frightened expression on his stupid face.

Suddenly the ground fell off at a very sharp angle; we stood at the top of a forest-clad barranca, 300 feet high, that sloped abruptly down into the valley. I was to lead one of the pack-horses, our old friend Ruckel: he started to tremble as soon as he saw the steep place, and nearly crushed me against a tree. We found that we had reached our goal, the place where Rio Carbón joins Rio Mayer. We camped in a high and lofty roble forest. Mr. Hatcher made his principal geological studies in the Meseta east of Rio Carbón, and so the geologists were very anxious to visit the place. However, our halt did not result in much; it proved exceedingly difficult to identify Hatcher's localities; certainly we had no presentiment of the discoveries, still greater than those made here before, which were in store for us.

When our caravan started again on January 5 we did

not expect to cross the pass over to the depression of Lake San Martín in one day. The maps spoke of difficulties, and the distance was great. The first part was not very difficult and at 12 A.M. we passed the last forest-patch and made up our mind to push through. The river, which carried plenty of water, had dug its course between vertical walls. To pass above the barranca was impossible, for on one side it rose sheer for many hundred feet ; on the other was the basaltic meseta with a ground covered with millions of blocks, impassable for horses or even mules. Thus we were bound to keep in the bottom of the ravine, working our way with the speed of a snail and climbing incessantly from one side of the river to the other. Often cross ravines or protruding joints stopped us, and we had to exert all our powers to drive the horses through such places, where they one moment would climb the barranca and the next rush down into the water. In spite of all we could not help laughing at the mare, who tried to climb a vertical wall, but came down faster than she expected. We came to ground covered with large, sharp-edged blocks: the troop dispersed, the pack-horses stumbled and fell. Without hesitation we let our horses loose, climbed up to fetch the others and managed to drive them down to more even ground. Luckily enough none of them were hurt.

The higher we rose the narrower grew the valley, and the snow increased exceedingly towards the pass, and we came upon large drifts and bridges which bore or broke just as it pleased them. When we reached the pass, we had crossed the river twenty-seven times.

The whole pass was covered with snow—only on the steepest walls the withered rock lay bare and yellow, without a trace of vegetation. The river wound between vertical walls of ice and snow a few yards high. We rode in the bed between them, until they met in an unbroken white cover, under which the river disappeared. Across the snowfields we slowly approached the south side of the pass. We were prepared for nice surprises in the shape of floating soil, and I very much doubt if we shall ever forget that afternoon in the Cañadon of Rio Fósiles. It is difficult to think of a more terrifying scene. Everywhere high, steep walls with dirty melting snow-patches, streams of clay, red-brown or blackish, and deep down under our feet the river like a boiling mass of red mud. Not a blade of grass—life seemed extinguished; only a single condor soars comfortably among the peaks watching the little black points, which struggle along, expecting every moment that a horse will get tired, stumble and fall down into the abyss.

There were places where we stopped without knowing at first what to do; sheer rock walls where we could see how the horses strained every muscle not to lose their foothold, or loose floating soil, where they sank down and fell. It often happened that danger was unsuspected; the surface is dry, hard and full of crevices; one drives the troop along and then, suddenly, all the horses are down in the mud. If we had not helped Jakob in time he would have stopped where he was; the clay dragged him down, he struggled for his life, but rolled round and started to slide down with the thick

reddish mud which slowly floated away. We saved the Winchester which was tied to his saddle, took him by the legs and turned him round while one pulled the cabresta and the other whipped him, and finally we got him on firm ground again. Halle's look when he met his horse again was worth money. But he had not time to worry. A discovery of an unknown rich fossil flora had been made by him when he was away from the caravan, and this cast a gleam of brightness over the unpleasant valley.

The hours passed and the horses became more and more difficult to manage. To ride was impossible, and many times we met with passages which the animals could hardly clear even with an empty saddle. We followed the east side of the river, and by-and-by climbed out of the Cañadon on to the plateau, where the patches of vegetation soon closed together. The first, violet forest-patches were seen in the gloaming but we could not reach them. Night fell and quite exhausted we threw ourselves down by the first bushes, some "mata blanca" (*Chiliotrichum diffusum*). We had been under way twelve hours without rest and over the worst ground to be found in Patagonia. We were 3000 feet above sea level and had covered a distance of twenty miles since the morning.

When we came the following morning to fetch the horses, almost all of them had lain down, which had hardly ever happened before. We saddled to ride to the first forest-patch, two hours' march only, and there the horses got a rest and we made our usual excursions. We had discussed the possibility of stopping here some

days, but Halle thought the find so rich that he preferred to return to the place during our boat-trip. Another reason for continuing the march was that we were short of provisions; the last thirty-one figs were boiled with the last handful of rice, and from the last remains of the bag of flour two small loaves were made. Consequently we made a fresh start the following day, January 7, in order to reach an estancia near Lake San Martín which we had sighted from the pass. The descent was not difficult, but the ground was such that it gave the horses much unnecessary work, a confusion of hills and canyons impossible to prospect. We had just come down a very steep barranca, when on a little green patch below we caught sight of a man on horseback driving a small troop. "How far is Frank's farm from here?" "Only a couple of hours," was the answer, we should soon strike a track. At once we divided the last loaf—it must not happen that we reached our goal with provisions to spare. We soon found the track, which followed a peculiar winding canyon where the air was still and the heat oppressive. Suddenly the view of the steppe opened, there lay the well-known houses of corrugated iron, shining in the bright sun. Our friend Mr. Frank met us, and the curtain fell on the second act.

We had met Mr. Frank on several occasions and he had showed himself much interested in our plans and wanted us to visit his farm in order to make an excursion on the lake together. He is a German and lives in Santiago during the winter. To reach his farm he has to take the steamer through the Straits and up to San Julián;

from there he rides or drives up to the Cordillera. Some years ago he had a special motor-car constructed to go between the farm and the coast, having high wheels to pass the rivers. The result, however, was not very brilliant—it took twice as much time with the motor-car as with the bull-carts. But as the first experiment it is worth a page in the history of Patagonian colonization.

Shearing was just finished, but an important piece of work had still to be done before Mr. Frank and his people could be ready to join us in the excursion. The sheep had to be dipped in order to prevent the spread of " the scab," a disease that of course has a very disadvantageous effect on the quantity and value of the wool. They swim through a channel filled with some disinfecting fluid, and a man stands ready to give them a proper dip. Up they come again, snorting and bleating soaked with the brown water.

We devoted our own energies to the boat. There was left over from the time of the boundary commission a ruined cutter, built by Captain Högberg; all loose things had been stolen and the remains were of no use. But there were also two canvas-boats, which lay on the ground close to Bahia de la Lancha, a cove not far from the farm itself. One of them was very large, not collapsible and half-rotten, and we could not think of using it. The other was of the same type that we had used before in Tierra del Fuego, a first-class Berthon, but much longer than ours, easily carrying eight persons. It had been transported there some years earlier, but left on the beach and never launched.

Wind and weather had treated it badly; part of the wood was broken to pieces and the canvas had numerous holes so that it was a job to repair it. But we all helped and Pagels was very handy, as usual. On the 10th our work was finished and lay shining in the sun with fresh paint and patches. We were sorry not to be able to start at once. Certainly we had much to do in the neighbourhood, and we saw day after day go by without getting off. At last, on the 14th, they finished the dipping and then came the preparation of provisions. For meat we only carried the carcasses of two sheep; they would not last long, but we were sure to find something to shoot. On the 15th we went down to the beach, Quensel, Frank, myself, Pagels and two men from the farm. It blew hard, but we wanted to be quite ready when the calm came.

Lake San Martín, which is 660 feet above sea level, has the most peculiar shape of all the Cordilleran lakes. Its surface is 376 square miles and is split up into several long and narrow arms, veritable fresh-water fiords, penetrating far into the mountains. The most westerly of the two north arms, here called only North Arm, is the longest; the eastern we call the Mayer Arm. The North Arm turns to the north-west near its end. and here we find the outlet of the Lake, the big river Pascua, which empties into one of the branches of Baker Inlet in the Pacific. From this latitude and down to Ultima Esperanza there is no interruption in the inland ice; all the lakes south of San Martín empty into the Atlantic, except the Payne lakes, which send their water to Ultima Esperanza through Rio Serrano. The

West and South Arms penetrate furthest into the Cordillera, and in the latter the glaciers come down to the water. The prevailing westerly gales drive the icebergs out of the South Arm; most of them run ashore without getting very far, but some are seen from the settlements. The temperature of the water even in summer does not exceed six or seven degrees centigrade. Rio Pascua not only carries the water of San Martín but also of much more distant lakes. As the reader will remember we made the acquaintance of Rio Mayer on the other side of the Fósiles pass, where it comes from the canyon; after having received the rivulets Ñires and Tuco-tuco this river makes a sharp turn to the south and receives through Rio Nansen or Carrera the water from the lakes Nansen, Azara and Belgrano, disappears for a second time in the mountains and emerges in the arm of Lake San Martín.

Through the descriptions of the Boundary Commissions we know how very difficult, not to say dangerous, it is to navigate on Lake San Martín. The wind, which often rises to a gale, can make progress to the westward impossible for weeks. We trusted to our luck—there was nothing else to do till we were able to make a start. It calmed on the 16th; we rose hurriedly, hauled our boat down, launched it, stowed the cargo in and got under way with our little Swedish flag in the bows. Frank steered and the rest of us pulled the four oars—thus we had not much chance of being lazy. Rio Fósiles has built a sandbank across the East Arm, where we now were, and when the water is low it quite shuts off the arm; we found a narrow passage and came

through. We landed for a while on the rocky shores of Chacabuco Peninsula to cook some food and thence continued to the northern shore of the lake. We met a heavy sea that broke all along the Fósiles delta, and after several hours hard pull we landed for the night. A glance out of the sleeping bag showed that we could not think of starting the following morning. Over the lake blew a fresh westerly gale and only at 4 P.M. did we resolve to try again. There was plenty of sea and we shipped some water and soon water also came from above in the form of heavy rain, which in a few moments soaked us to the skin. But it abated the violence of the waves and we had to economize time so we went on till it was quite dark. We were then close to the Cancha Rayada Peninsula, where a bay with a little natural harbour appeared.

Storm again! We had a very nice camping-place with a shelter of some rocks and surrounded by a dense brushwood of *Escallonias*, just in full blossom with flowers from snow-white to a deep crimson. And we had plenty to do. I myself climbed about on the rocks collecting ; Quensel studied the geology; and Frank shot ducks in the salt-lagoons. The ground reminds one of the kind I have described above from the north shore of Lake Pueyrredon.

We tried again on the 18th. As long as we had shelter under land it was all right, but when we had to round a promontory the old game began as before. From the north-west came a heavy swell from the lake, and from the north-east as well, out of a large bay, the seas met together over our poor little boat. The

weather became squally, there was a " smoke " of water on the port, on starboard and ahead, the regular swell changed into a confusion of white furious sea, impossible to reckon with, that seemed to come from every point of the compass; our fragile craft—canvas and a wooden frame—was banged about, sometimes with such violence that the oars jumped out of the rowlocks in spite of all our efforts to keep them in. But the boat stood the trial in an amazing manner. Of course it shipped some water—enough to soak us—but on the whole it proved more seaworthy than we had expected. However, we had to look for a harbour and found an inviting corner in the above-mentioned bay which we named Bahia Cuchillo, in remembrance of my last knife that I left there.

We kept a sharp look-out, and when the weather got better we started again. The question now was how to cross the entrance of the Mayer Arm. We made for the eastern headland, which dissolved into two small isles when we came closer. The passage was critical enough, the waves came from two directions and were as high as our boat could stand them. It was a hard job and we felt very happy when we had reached the west head safely, where we slept like logs.

Now we had left the pampas behind and the forest formed one continuous cover on the shores. Had the water only been salt we could have believed ourselves in the channels of West Patagonia.

We went out again in the old swell, and made a good start. But suddenly a suspicious gust of wind came and then the gale began again. And it came on properly

this time; so that we passed some moments of considerable anxiety. The gusts seemed to rush down perpendicular to the water and whirled it up to a height of thirty feet, the spray stood like a fog over the whole bay, and the atmosphere glittered with hundreds of minute rainbows. It was beautiful—but what if we had come into one of the tornadoes that danced along to our right and left? By exerting every effort we managed to reach the innermost corner of the bay and awaited the development of events. A torrential rain supplied what still was wanted to make the weather quite ideal!

Ahead of us we had a peninsula, ending in a well-marked point, and when the gale had abated a little, we pulled to it and even tried to get round but were driven back and were glad to discover a small crevice just big enough to hold the boat. We waited again; from the point we could overlook the lake, but what we saw was not promising. Now and then we climbed up to see if things were improving and finally resolved to risk another struggle. I do not think we shall ever forget it. The waves were big enough for a lifeboat, and our little nutshell quite disappeared, but rose up again, climbed the watery ridge and won. But we could not spare ourselves; we had to expend the very last ounce of our strength and energy and still we could hardly note that we really were advancing.

The view of the lake had been rather limited until now. A cry of admiration was heard, when the west part appeared behind a cape, exposing the gigantic

glacier in all its extent near the mouth of the Southern Arm. It was as if this sight spurred us to new efforts, and over crests of white foam which generally shared their abundance with us, we pulled towards the eastern head of the Northern Arm, where we rested upon our oars an instant, ready to try a somewhat dangerous experiment—to cross the arm. We had hardly left the shelter of the point behind when some furious squalls attacked us with such ferocity that we were driven back. We had been working for thirteen hours and badly needed some rest.

Thus we stood at the entrance of the fiord, thirty-eight miles long, whose end was our goal. To judge from the appearance of the coast-line, the west-shore afforded some advantages and our first enterprise was to cross the arm. Once again we met heavy seas from two directions, and it cost us three hours very hard pulling to cover two and a half miles! We searched a while till we found a place where we could tie the boat up out of reach of the breakers. No smooth beach could we discover. Do not believe, gentle reader, that the whole thing is very simple—that you just land if something happens which makes it desirable or necessary. It is not at all so easy. For long stretches the mountain sheers down at a very sharp angle or even vertically from a height of several hundred feet. And it is far from being the case that all sheltered places are good. A canvas boat is as fragile as an egg, especially when one is on a lake in the Cordilleras, without being able to get back over land as we were now. A hole in the canvas, and farewell! With the greatest care

we chose the place to haul up the boat; the best being on a beach of sand or fine shingle. Pagels, who was an old sailor, regarded himself as an expert and responsible for all our lives, and never forgot to shout "gerade auf dem Kiel" when we hauled up the boat, and if we were not quick enough he abused us. If I got angry and told him a bit of my mind he always said: "Sie wissen doch, Herr Doktor, dass ich immer aufs Beste der Expedition arbeite." And nobody doubted that his intentions were the best in the world.

At last we had entered the Northern Arm. But our bad luck did not leave us. The first day we made little more than a mile when we were once more stopped by wind and sea, and with the experience we now had of the boat it really required something to stop us. We lost a day and a half waiting. True we knew that we were in Chile again. The forest also had undergone some changes. Our old evergreens once more played an important part; vast bushes of fuchsia and even the typical rain-forest plant, *copihue* (*Philesia buxifolia*), with its large pink flowers had reappeared. At last we could make another move, but our joy was short-lived and we had to camp again. It was a fine place, that reminded us very much of the old camp near Rio Azopardo's mouth. The weather was bright, though windy, and the fiord covered with white crests. It had cost us eight days to reach this point, and we could not know how many more we should require to reach the end of the fiord. Probably we should not gain much more in our scientific work than we had done already. Our appetite, I am

sorry to say, had increased in proportion to our hardships, and there was little left of our provisions. We made a trip into the forest to get meat, and shot a deer and some ducklings.

However, it was with sore hearts we decided to turn round without having reached our goal. It made us grumble, but there was no help for it. In order to get our clothes dried, which we needed very much, and to make a sail out of two old pieces of canvas, we stopped the night where we were and went back on the 27th. We wanted some recompense for the disappointment and probable loss we had sustained and consequently sailed along into the Southern Arm to have a look at the great glacier, which we named Ventisquero Schönmeyr. The northern end of the ice-barrier, which is about two miles and a half long was barred by icebergs, amongst which we pulled into a piece of open water. Here a little episode, which proves that we had good luck sometimes, took place. We wanted to get a snapshot of the boat in the ice, and to that end I jumped ashore on a rock; the picture had a fine background of icebergs from fifty to sixty feet high above the water. Hardly had we got away from the unpleasant company, when the largest by which we had lain the moment before lost its balance and capsized with a great noise. Had we still been there the expedition would have come to a quick and dramatic end. Further away we landed on the ice-barrier, where it rested against a small mountain, either a peninsula or a small island, half covered by ice. Quensel could study the blocks in the moraine and thus get an idea

of the principal rocks in the centre of the Cordillera; the moraines carried no material from the surrounding mountains. We camped for the night on a promontory a few hundred yards from the glacier. The wind had died down, it was perfectly calm, and the stars twinkled in a clear sky. Sometimes there came a thundering noise from the great glacier. We went to sleep in unusually high spirits—no more pulling! Now the west wind could blow as much as it liked, but we could be lazy and do nothing but sail.

Try to imagine our surprise when we woke up to find it absolutely calm. Well, we could pull for a little while, surely the wind would come. And it came—easterly. For the first time we had an easterly wind, always rare here. Our discontent over such topsy-turvy meteorological conditions was as loud as it was natural. The head wind did not last long, but it was followed by a dead calm. For two days it did not blow the slightest puff till the very last moment we pulled—nine hours the first, five the second and last day, and with unmingled satisfaction we heard the keel grate on the bottom in the Boat Harbour. It was January 28 and we had gone eighty-one miles on the lake.

We needed a day to get fresh provisions, but were then ready to start again. The horses had enjoyed three weeks' complete rest, as Halle had got horses from the farm for his excursions. He was ready with his study of the geology of this region: the results belong to the most important obtained during the expedition. When we rode away "Jeremias" was left behind in the corral, neighing loudly. We abandoned him because

his back was so bad that it would take him a couple of weeks to get well again; when he was loose he only disturbed the discipline of our troop. But his despair at being separated from his comrades was probably very real.

CHAPTER XVI

ACROSS THE SIERRA DE LOS BAGUALES

It was already late in the day on January 28 when we said good-bye to Frank's *estancia*. The peculiar basaltic peak Cerro Kachaik rising abruptly 2000 feet above the surrounding pampas and visible for a very considerable distance, was kept on our left and we headed for Laguna Tar, a lake bordered by extensive swamps. A small stream unites it with Lago San Martín, which in pre-glacial times had its outlet through the Tar depression towards the Atlantic coast. By dint of spur and whip the marshy places were passed, and, keeping higher up the slope south of Laguna Tar we avoided the swamps. We made a halt at Mr. Reeves' new farm and stopped for the night. The small company were in very comfortable frame of mind in spite of the earthen floor and the chairs in the shape of old wooden boxes, once containing articles so inseparably associated with camp-life as Danish butter and condensed milk. And after the master of the house had found a motley company of old tin and china mugs, the grog had been mixed, and the gramophone—never wanting—starting on its waltz tunes, we could not help telling each other how well off we found ourselves. Suddenly the trotting of horses sounded through the night, and two horsemen came galloping up, welcomed

by the barking of the dogs, unsaddled, came in, and got a wooden box each to sit on. I tell this only to show how small the world is. We sat looking askance at each other, one of the last arrived men and I, wondering, "Where have I seen that face before?" By-and-by the truth flashed upon us. He had been on board the cutter *Chance*, in which I had made a journey in the Falklands from Port Stanley to Port Louis, July 1902. That now, after six and a half years and in spite of my full beard, he was able to recognize me when we suddenly met in the heart of Patagonia I could never understand. One can never feel safe!

There was one drawback connected with our visits to people: we never got away in proper time the next morning. They must always make a spread for us of all they could produce, and never understood that we were in a hurry. What did an hour or two matter? The distance was so great. Thus it was here also; they did not let us off without a substantial breakfast.

Following a depression, we rose a thousand feet and then descended into the valley of Rio Shehuen. There was a basalt *meseta* in front of us, called M. del Viento, and we held a short council of war in order to decide upon the best way. According to the map, th ought to be a choice of two possible routes, and we chose the one which looked best, climbed about 1300 feet, descended into a shallow basin containing a couple of small lagoons without outlet, and finally rode up to the pass, a well-marked gap between black basalt peaks. It is only 3000 feet high. I saw how my comrades, who were a few steps ahead, started to cheer and wave

their caps when they had reached the highest point. Within a minute I was at their side. Below was the large sheet of Lago Viedma, between the mountains behind it a corner of Lago Argentino, and far away to the south the long, jagged line of the Baguales Mountains. Behind these was our goal. The *meseta* slopes gradually towards Lake Viedma, the surface of which is only 825 feet above sea-level. In vain we looked for a camping-place on the slope. We wanted to avoid the *détour* to Rio Cangrejos; but nowhere was grass, water, or fuel, so we were forced to seek that river. The dogs kept up our spirits. They stopped and sniffed round a bush, where an unmistakable odour of skunk indicated the reason. It had happened often before, but generally they had to be contented with the smell. Here, however, the wretched little beast sat ready to defend the position, glaring defiantly at the enemy. Wise by experience, Prince was careful, but the innocent Pavo threw himself on the animal; quick as lightning it turned round and sent him a well-directed volley right in his face. He retired, rolled in the sand wild with rage, rushed at it again, but with the same result. Now Prince also advanced, and the two companions did not leave the battle-ground till the skunk was changed into a shapeless mass. All the afternoon they behaved as if they had lost their wits—they indeed tried to run away from themselves to get rid of the horrible smell, making us double up with laughter. Two days later they still perfumed the surroundings with the nauseous smell.

Rio Cangerjo has a canyon of the kind one does not

discover till one is close to it. Down in the bottom nature was different altogether—any amount of fuel, rich grass, and clear water. Next day we passed the east end of Lago Viedma. One has a very fine view from there. The shape is still more regular than that of Lago Buenos Aires. Hardly can one imagine a greater difference between the two extremities of an Andine lake, and here one is able to observe it at a single glance. To the west a gigantic glacier comes down to the water between fantastic summits; to the east the low, sandy pampas stretches as far as one can see. We rode down to the shore to the waving fields of *Stipa*-grass, the long, silky brushes floating eastward on a fresh breeze. The further we came east and south the more barren was the ground, and during the whole trip we never saw a tract more bare than this. Large parts are almost desert-like. Save for some armadilloes the camp was quite inanimate.

Lago Viedma empties into Lago Argentino by means of a broad river, called Rio de la Leona, in whose valley we had hoped to find pasture for the horses, but were greatly disappointed. At two places we saw great piles of guanaco bones, of which the explanation was that the guanacos have certain places where they lie down to die.

We camped near the outlet. Our horses had hardly any grass, and we tried to keep an eye on them. After it had got dark Pagels went out and drove them down to the river, but nothing was of any use, for they wandered far and our start the next day was much delayed.

We followed the east shore of Rio Leona. At first

the ground did not present any difficulties, but after a while the valley changed into one of the finest canyons in South Patagonia. Thanks to the paths made, first by guanacos and afterwards by horses, one is able to pass the barranca, though the utmost care is necessary. Besides, we were already prepared for what was to come, for Mr. Reeves, who knew the way, had told us that we should have to climb the barranca and continue at a higher altitude. We found a ravine where we could lead the horses, climbed high up, and came into a country the like of which we had never seen before. It is difficult to imagine anything more desolate and barren. In every direction a wilderness of hills, ridges, and ravines, all the landscape of a yellowish-grey colour, with nowhere a green blade or a drop of water. The air was oppressively hot; not one sound broke the absolute silence, not a living soul was seen or heard. Thus it must feel to travel on a planet where life has died out. One has to walk with great care, for the ground is full of small, scarcely visible cracks, which open below into large, funnel-shaped holes, probably formed by water in the spring. The horses were not accustomed to such pitfalls, and would have gone right down had we not looked well after them. We felt quite uneasy in this desert, and welcomed the murmur of the river and the fresh breeze with joy. In outward appearance the landscape reminds one of the famous "loess" in China, though geologically there is no resemblance.

The ground along by the river made us very tired, and with longing we looked for human dwellings, knowing that a German settler, Karl Fuhr, should live some-

View of Pampas near Lake Argentino.

Dead Landscape, east of Leona River.

where on the other side of the river. The river must be crossed in a boat, and as soon as we got sight of the house we made a signal-fire. When we came down to the river he met us and took us and the luggage across. The horses were left on the other side, the *yegua* with *maneas* on and one horse with a tether; thus we felt easy in spite of the bad grass. Carlos Fuhr is well known throughout Patagonia, and his yarns and adventures would fill a book. He was there at the time when fortresses were built to check the Indians, when the veil of fairy-tales still hung over Patagonia. He had tried a little of everywhere, but at last seemed to have settled for good. Especially is he known for one achievement: he wounded and captured Ascensio Brunel, the horse-thief and murderer, the "wild man" of Patagonia, who appeared when least expected and disappeared as suddenly as he came, the outlaw whose fame reaches from Nahuelhuapi to Ushuaia, who had frustrated the efforts of all Patagonian policemen. At our request Fuhr kindly promised to transport us across Rio Santa Cruz in his ferry-boat. Thus we saved both time and money, the road striking the river further east, where there is a *boliche*. The landlord has a ferry, but to go there would have necessitated a *détour*, and the man is known for keeping his guests under all sorts of excuses; he postpones the crossing and one has to pay high prices for accommodation.

We wanted to cross on the day of our arrival, but according to Fuhr it was blowing too hard; the horses would meet a head-wind and perhaps not be able to swim against it. On February 2 we got away. It was

very long before we secured the horses, for the watch-horse had broken his rope and there was no trace of any of them. We searched in all directions, till at last we found them mixed up with other horses and the mare without *maneas*. The reason of all this confusion was love, in the shape of a stallion, who, for Tecla's sake, had abandoned his harem. Down at the river Santa Cruz, the outlet of the Lakes Argentino and Viedma, we met two other parties waiting to cross with their *tropillas*. One of them was the inspector of police at Lago Argentino, the other a man from the Baker Company on his way to Punta Arenas with the last peons. Through Captain Steele he had heard about us, and now brought news from him. A steamer had called in Baker, Steele and the other men had gone away in her, and the farm was now empty, cattle and sheep running wild.

The small ferry runs on a thin steel cable, and only people and luggage are carried by it. The horses had to swim the distance of nearly 400 yards. They were driven in with loud shouts till they got out of their depth. It was a fine sight to see the three troops swimming in the strong current, which took them more and more out of their course, but at the same time we felt anxious. It is not uncommon that weaker horses are caught by the current and drowned, and we had hardly any experience of our horses as swimmers. With our glasses we followed them eagerly. Vingel was the first man home, then came Trumf and Isac. One after another came out, shook himself, and was all right. We felt relieved when they were all in safety. Now we crossed—the ferry driven by the

current in every direction—caught our animals and bade farewell to our fellow passengers. They took the usual route south, but we set our course on the Baguales Mountains, south of the lake, where we pitched our camp that night. Quensel had now crossed his track of the summer before. In Mr. Cattle's farm, not far from the shore, he had his headquarters for some time, and from there he undertook an interesting boat-trip which he relates in the next chapter. His memories of Estancia Cattle were so pleasant that he would not pass at a distance of some miles without shaking hands with his old friends; I myself very much wanted to visit Cerro Buenos Aires, while Halle and Pagels would continue up towards the pass over the mountains and camp by the last bushes for the sake of the fuel.

We saddled Flax and Johansson early in the morning and made west. It was a pleasure to set them at a gallop, for with the packhorses we had generally been confined to a walk or trot, and now found them as good as the horses we borrowed for our excursions round the settlements. The farm we now went to visit is pleasantly situated on the north slope of Cerro Buenos Aires between two forest-patches. The master of the house was not in, but we were welcomed by his partner, one of the most remarkable figures of the extensive gallery one is able to call to mind after a long journey. She was the Amazon of Patagonia, and I had heard of her before. When she comes walking towards you dressed like a man, with hair cut and pipe in mouth, nobody could tell that a woman, and an educated, intelligent English lady of a very good family, is before

him. The equal of any man, she takes part in the daily work on the farm, throws her lasso like a *gaucho*, or digs in her garden, where there are cauliflowers as well as strawberries. I am afraid my reader may think her a disagreeable person only wanting to get herself talked about, and at a tea-party in Punta Arenas her very name is enough to call forth a cry of indignation. But do not form an opinion too hastily. Nobody comes to Cattle's farm with an unfavourable preconceived opinion without leaving it with quite another, and, like myself, finding the woman *gaucho* a highly interesting and genial person. We have nothing to do, however, with her story—it is a romance as romantic as any. For the last seven years she had not left the farm.

According to our agreement we were to join the caravan on the 4th. We stopped for the night and made an excursion to Cerro Buenos Aires, where one gets a splendid view over the lake. Up there, on the stony slopes, a disaster long expected happened: my old boots refused to serve any more. I had long foreseen the catastrophe, but in vain tried to get a pair large enough. Most people in Patagonia seem to have small feet, and those who have not had no boots to spare. The result was that I had to leave Cattle without any and pass the Baguales range in a pair of slippers, which, however, is not as bad as it sounds, for one is able to ride most of the way. It was already late when we left the farm, and in a gallop we made for Rio Centinela—which we were to follow up to the pass. We looked for the tracks of our caravan

in vain, although some passages along the river are so narrow that one has to ride in single file. It grew dark; still no trace of a camp. We kept high up along the barranca to get a better view, but the distance to the last calafate bushes was greater than we had thought, and it was already night before we saw the fire. Halle told us that two strange horses had joined the *tropilla*, and we resolved to let them help us across, should they still be there in the morning. They were, so we saddled them, and found them to be a pair of good horses. Both of them were marked, probably left behind by some traveller, and we let them go when we were on the other side. Sierra de los Baguales, named after the wild horses found there in old times—in other parts we had seen such, as well as wild cattle—makes a very irregular impression, thanks to the basaltic cover. The pass itself is very picturesque, with its mighty pillars and masses of stone in the shape of ruined castles and fortresses. The way along the Centinela valley cannot be called bad in comparison with what we were used to; there is indeed much boggy ground, but one can get round most of it. The caravan went ahead of me, for in spite of my soft slippers I crossed the pass on foot and secured a rich harvest of Alpine plants. Guanacos were plentiful and very tame, and our dogs were very energetic in hunting them, but without result, for the young were big enough to follow their parents.

We had crossed the wall between wild life and civilization. In front of us was the part of Chile called the Magellan Territories, South Patagonia, colonized throughout. Within a couple of days we should get

into communication with the rest of the world; the post was waiting for us, and there is a telephone line to Punta Arenas. We had taken the decisive step. On the south side of the pass originates Rio Baguales, the valley which we followed till we came across a small calafate thicket, which afforded us some fuel.

The last camp! The hot *asado* over the last camp-fire, at least with the whole caravan. Certainly it was high time that this long journey came to an end, but we thought with regret of all the pleasant hours spent round the fire, and with unmixed satisfaction we looked back on the past months with their thousands of varied memories. For the last time we struck camp, followed the river another couple of miles, and came down on the slope of Cerro Contreras, where we soon found a road and where a strong smell of creosote met us, showing that a "dip" was in progress somewhere near by. We soon caught sight of the large iron shed, and rode into a well-kept farm where dipping was going on. It was one of the *estancias* belonging to the "Sociedad Esplotadora de Tierra del Fuego"; below I shall say something about its influence on the history of South Patagonia. We were very well received; the manager even lent me a pair of boots which were big enough. From here we could telephone to Cerro Castillo, the central *estancia*, where we spoke with Mr. Burbury, the chief there, whose acquaintance we had made at Punta Arenas. He welcomed us back and told us that a big mail lay waiting for us. We left Halle behind; fossiliferous layers had been reported in the neighbourhood, but no specialist had ever visited

them. Quensel and I continued on to Cerro Castillo, the headquarters of the company. Never before had I found our progress so slow; the reins seemed to burn our fingers, and with joy we hailed the first glimpse of the big settlement, where we stayed in the manager's quarters. Two boxes of letters and papers waited, for it was four months since we had any news, and far into the night we stayed up reading, surrounded by the mail spread out over table, chairs, and bed.

Before I go on to describe our excursions in South Patagonia some words on the history of its colonization might be appropriate here. After the foundation of Punta Arenas, in 1843, Chileans as well as strangers started to settle along the Straits, mostly for sheep-farming, but also to look for gold or other valuable metals. Many people in Chile did not believe much in the future of the colony, owing to the fact that the region was unknown to them and reported as being hardly habitable. However, civilization spread over the Brunswick Peninsula and into Tierra del Fuego, and finally the Ultima Esperanza district, which interests us more especially, was also populated. This was at the beginning of the nineties. At first the colonists settled down without paying any tributes or taxes and the land was apportioned by private agreement. In 1884 the Government assumed control and the first fixed lots were given on leasehold tenure. South Patagonia had already proved to be a land of the future where sheep-farming might become a source of wealth for many, and voices were soon heard arguing that the State should sell the land. Without being

owner of the soil nobody would sink either money or labour in it, but a sort of sweating system was introduced in order to make the greatest possible amount of money in the shortest space of time. It was very long before the Government consented to listen to the complaints from the Straits of Magellan, and when at last something was done it was done in a manner hardly likely to satisfy the just demands of the farmers. In 1902 it was resolved to dispose of one million hectares by auction, but everything was done in such a hurry that many colonists had no time to arrange their business affairs, and the auction was to be held in—Santiago! The auction was postponed, and in 1903 part of the land was sold, divided into ninety-five lots. Only in the Ultima Esperanza district had everything remained as it was.

The first *estancia* there was started in 1893, and by the beginning of the next century there were a score of flourishing settlements, life and movement grew apace amongst the mixed English and Scotch population, and Punta Arenas increased rapidly. Then a decree was issued ordering a large piece of land to be put up for auction in Santiago on March 15, 1905. People were attacked by a veritable fever. In a few days' time half a dozen companies had been formed with big capitals, and in order to save their homes the colonists formed themselves into one company, the "United Estancias of Ultima Esperanza." At the auction there were wild scenes, enormous bids were made, and lots were sold at prices ten times their true value. The result was that most of the purchasers could not pay

at the proper time—for the companies' capitals existed mostly on paper—they lost their rights, and another date was fixed for another sale. Meanwhile the Sociedad Esplotadora, which owned large estates in Tierra del Fuego, appeared on the scene. With a big joint capital at its back it entered the field and acquired almost the whole district. The colonists had to surrender unconditionally and take what it pleased the company to pay them for houses and fixtures, the cosy homes were broken up and Cerro Castillo made the headquarters. The company now has about one million sheep. I can hardly believe that the revolution was favourable to Chile's interests, and I daresay that is a rather ugly page in the history of a so-called democratic people. Men who knew Patagonia before and now say that the star of Ultima Esperanza sank when the all-mighty company became its master. Personally we owe much to its leading men, Mr. A. Cameron of Punta Arenas and Mr. T. Burbury of Cerro Castillo.

CHAPTER XVII

LAGO ARGENTINO

THANKS to the kindness of Quensel, I am able to give some details of his interesting and perilous voyagings on Lago Argentino. This big lake has the typical Andine character; its western branches run far into the mountains and receive extensive glaciers from the inland ice. Quensel went on horseback to the end of the south arm and to Lago Frio, but in order to continue his work to the most westerly part he had to take to the water. There was in Cattle's farm an old canvas boat, rather dilapidated but still usable, of the same pattern used by us on Lago Belgrano. Here follows Quensel's narrative:

"At sunrise on January 13 (1908) we finally got away, after having waited two days on the shore for calm weather. From the very first moment Æolus was not very gracious to us. A surface like a mirror and a blazing sun encouraged us to set out on the lake, but we had just gone so far that it was too late to turn back when the first black line appeared announcing a gale of wind, closely followed by a white line of foam, and the water was flung more than thirty or forty feet into the air. To pull against one of these squalls was impossible, and the best thing to do would have been to land, but often there were steep cliffs

all round and the only chance was to turn the stern against the sea, which threatened to crush the small, heavily laden boat. But Pagels had not sailed round the globe for nothing; his skill served us in good stead, and everything turned out all right, though more than once we had a narrow escape.

"Our first destination was the Bismarck Glacier in the Southern Arm, which we reached in two days. Half-way we had met some big icebergs and were prepared for what was to come. They measured about a hundred feet above the water. The glacier in question was first visited and described by Professor Hauthal, and is of special interest. From the inland ice it protrudes more than a mile out into the water; the height of its front wall, crowned by innumerable pillars and needles of pure ice, varies between sixty and a hundred feet. In front of it was a broad belt of drift-ice, but we navigated carefully through the 'pack,' which gives the branch its name, Brazo de los Témpanos.

"We camped on the south side of the glacier and spent the following days in studying the ice. What makes the Bismarck Glacier so remarkable is that, in contrast to all other glaciers in South Patagonia that I have seen, it is advancing rather rapidly. Without exception the others withdraw, sometimes indeed so fast that the vegetation is not able to follow, so that there is a sharp limit where the ice stood before. But this one forces its way through the high forest on both sides, crushing everything in its way; I saw trees, still green, that had been knocked down by the ice, and under the very edge shrubs still alive peeped forth.

We were able to reach the southern end of this fiord. I walked on foot to Lago Frio and climbed a mountain. Below, in a southerly direction, was Lago Dickson nestling among green woods; in the west were Mount Stokes and the glaciers from the inland cover, the largest dividing into two branches, one extending to Lago Dickson, the other to Lago Frio. Thus I stood on the water-parting between Lago Argentino and the Payne region, between the Atlantic and the Pacific—the water from one and the same glacier seeking such different ways.

"We left the southern fiord in order to get into the northern. The entrance is narrow, but inside it widens into quite a system of inlets, of which different maps give different ideas. A narrow gap called Hell Gate is the entrance; outside we waited one day before we could venture in, and late in the afternoon of January 31 we got through. Everything indicated that we should have a calm night, so we resolved to row as long as we could. Hour after hour passed. Above in the twilight hung the tremendous cliffs, sometimes as high as 3000 feet; in the half-light summer night we could just make out the few places where we could seek refuge in case of a sudden storm. At midnight the moon rose, the larger icebergs shone with a ghostly glimmer, their fantastic outlines assuming the most marvellous shapes. With frequent changes we made good speed. We knew that the storm was only gathering its strength, and our object must be to take advantage of every minute. At 3 A.M. we caught sight of a big glacier glowing with a certain peculiar light as if it were luminous. Nothing is more difficult than to judge the distance to a glacier or an ice-

The Bismarck Glacier, Lake Argentino.

The Upsala Glacier, Lake Argentino.
(The biggest in Patagonia.)

Icebergs and Canvas Boat, Lake Argentino.

berg in the darkness. One believes oneself to be close to a piece of ice, or even turns aside to avoid a collision —and there is half an hour's pull to it !

"At dawn we landed on a low promontory, where the fiord divides into three branches, each of them ending in a glacier. Large masses of ice were adrift here—one could very well imagine one was in a polar country. The next day we wanted to pull into the southern branch. Tired as we were after the strenuous night, we overslept ourselves, and the sun was high when we were ready for a fresh start. The clouds had begun to chase each other across the sky, portending wind. Hastily we loaded the boat and set out, but in a couple of hours the first gust came, and a strong swell from the bottom of the inlet showed us that it was blowing hard in there already. We followed the eastern shore ; it was steep and inaccessible, and a heavy sea broke on the rocks. There was no time for long consultations. We chose a place where a shelf ran out into the water, pulled to it, and I jumped ashore ready to hold the boat. It was an anxious moment. Up to my knees in water, I managed to hold it ; pots and pans and sleeping-bags, cameras and haunches of venison were hurled up on to the shelf. We bore our craft out of reach of the waves and were safe. But not a moment too soon, for five minutes later we should not have been able to land there.

"We had now time to examine our refuge more closely. The small ledge was overgrown with shrubs ; above rose a precipitous wall. The ten square yards served our purpose, and with the teapot and the frying-pan over the fire we spent a comfortable night in our prison. We tried again the next day, but in vain, and I

resolved to go back and devote my energies to the north glacier and the big mountains round it. At nightfall two days later we landed on a beech with high forest in the background and a row of large icefloes outside. The glacier itself was hidden by a promontory. The following night we had a most remarkable experience, that might have had very serious consequences. As usual we had pulled our boat high up on the shore, sixty feet from the water and ten or twelve feet above the level of the lake. Wishing to get away at sunrise, we went to bed early. At dawn I was roused by Pagels, who stood in the tent door, ripping out with a fine flow of strong language: 'Himmel! Herrgott! Sakrament! Donnerwetter noch ein Mal!' it came without a pause. I sprang up to see what had happened, supposing that a fox had made off with some of our geese, a trick Mr. Reynard had played us before. But the sight I beheld drove me to complete Pagel's morning prayer in fluent Swedish. The broad strip of beach where we had landed had disappeared, innumerable small icefloes floated round almost to our tent; our boat was gone—on the spot where it had been left a small, deep blue iceberg was aground. Where was the boat? What had happened? How were we to reach human habitations again? These questions whirled through my brain at the very first moment. To two of them there was no answer—what about the last? The future looked dark enough—a march of four or five days across the unknown Alps north of the lake was not a very encouraging prospect. But we had good luck. We found the boat 800 yards further down, stuck fast

between two huge blocks. And later we learnt the explanation of the catastrophe. In front of the glacier was a barrier about three miles long and one and a half broad; large icebergs were piled on each other, and the interstices were filled up with smaller pieces of ice. It looked like a field of screw-ice in the Arctic sea. We understood that the glacier had discharged all this ice during the night; it dammed up the inlet, making the water in the narrow place rise nearly fourteen feet. Gradually it recovered its usual level. The gigantic glacier with the ice-barrier presented a splendid sight. I have called it the Upsala Glacier; it is the largest I have seen in Patagonia, the front wall attaining a length of not less than eight or nine miles. The wall was a hundred feet high, more or less. On the flanks magnificent granite mountains rose; in the background there was a marked depression, for 'Ventisquero Upsala' comes directly from the inland ice. During an excursion on foot up in a side valley I gained my northernmost point. With regret I had to go back and commence my return journey. The boat being heavier than ever, we had an adventurous run through Hell Gate. Pagels ran before the wind as far as he could, and I had my hands full baling with my hat, the most capacious baler I could find."

After two days Quensel was back in Cattle's farm, and from there went to Ultima Esperanza, whence he made a trip to the Balmaceda Channel. His arrival in Punta Arenas, where he joined the rest of the expedition, has already been related.

CHAPTER XVIII

OUR JOURNEY TO PUNTA ARENAS

On February 8 Quensel went to visit Mr. Ferrier, of Estancia Payne. I had to stay till I had gone through my collections, which badly needed attention. The cook, a Malay, was very fond of looking at my herbarium, but wondered why I made so much fuss over plants good for nothing, either for food or for medicine. I doubt whether I was able to explain the reason of my interest, and probably I left with him the remembrance of a more or less crazy fellow. I had also to write some letters and telegrams, which Mr. Burbury took with him to Punta Arenas. On the 9th I was ready, and rode away west accompanied by Pagels and a packhorse. The road led through the well-fenced camps of the company. Some rounded mountains with groves of roble forest gave the first idea of the Andes. We passed some buildings; it was the late Estancia Kark, one of the first in this part, but now, of course, abandoned. The same sight met us at Tweedie. Lago Toro lay open to our eyes, a typical Alpine lake, surrounded by high mountains. It disappeared behind Cerro Toro, but another lake spread out instead, and we followed it for a couple of miles. This was Lago Sarmiento, remarkable as the largest Andine basin without an outlet. Considerable deposits of calcareous

tufas are found on the shores. We halted at a house, but as nobody was at home we only let the horses take a mouthful of grass and continued our march. The road had come to an end, and was succeeded by a narrow path, winding over the hilly, forest-clad country. At once the view opened out ; there was a lagoon embedded in green woods, and we saw a small hut—our destination. I have hardly ever seen so many foxes as on this day, and never any so impudent. They sat down calmly on the roadside and stared at us, or ran about among the flocks of sheep. All were of the small kind (*Canis Azaræ*).

There was nobody at home here either. Some dogs ran round, and one had been shut in in the room, where we could not get. We had no provisions and looked all round in the kitchen to find something eatable. A piece of very dry bread and some coffee was all we found, and outside in a tree was the flesh of an old mare. Pagels did not conceal his disdain, but I told him to fry some horse-steak, and after he had seen me start with a good appetite he was not slow to follow my example. In Patagonia horse-flesh has a much worse reputation than with us.

All the day we had seen the Payne Mountain. I had heard much of it, and Quensel had described the impressions he got in very enthusiastic terms. And though I thought myself to be very *blasé*, when I beheld Payne for the first time free from clouds I stopped, looked, and never got tired of looking. And at the same moment I knew that from Nahuelhuapi to Cape Horn, from the Pacific to the pampas, there is but *one* Payne.

It looks like one of those geographical diagrams where, in order to save space, the height-scale has been overdone in proportion to the scale of miles. A beautiful array of peaks, one higher and more abrupt than the other, where the interesting geological structure may be understood by anybody, the main part being a light grey granite, the peaks black slates, and the limit between the different rocks very sharp. The king is Payne Oeste (West Payne), whose summit of 10,650 feet is covered with ice, and perhaps the most magnificent part is Tres Torres (Three Towers), three enormous pillars rising 2600 feet above the surrounding glaciers. The secret of Payne's beauty is partly all this, but mainly that it rises abrupt and isolated from the low pampas without any marked junctions with the rest of the range. One is not gradually prepared for what is to come, but suddenly has these 10,000 feet of rock close at hand, with no hills or lower mountains to be climbed first.

The next morning we continued, following a narrow horse-track cut by Mr. Ferrier. The ground is so broken that the path in more than one place makes riding too hard work for the horses. We had an adventure with our packhorse, who took the opportunity of running away when we were busy watering our horses. After a wild chase he was captured. At Rio Payne, a large river draining this district, we found a boat; the horses swam, and after another mile's ride we reached Estancia Payne. At the auction of land it was purchased by a young Englishman, the first to settle there, Mr. Walter Ferrier, who now welcomed us.

Here I will insert a brief description of some excursions undertaken by Quensel during the summer of 1907. On November 16 he left Ultima Esperanza with Pagels, and spent some time with Mr. Burbury in Cerro Castillo. From there he went to Ferrier's place. He has written about his travels in a Swedish journal, and I now give a summary of his description.

"With Estancia Ferrier as headquarters I made a series of excursions into the mountains and to the glaciers. From the top of the first high mountain I climbed, Cerro Donoso, I had a fine view over the mountain range, and as none of the higher summits had been climbed before, I got a chance of completing our knowledge of the geography of these parts. To the west was the edge of the inland ice; gently inclining, it extends as far as eye can reach, at first interspersed with *nunatahks* rising like steep black islands; further west even the steepest peaks are ice-clad. Split up into numerous glaciers, the ice comes round into all the valleys. In the vast moraines I had a good field for work, for from the stones brought down it was possible to form an opinion as to the structure of the mountains under the ice-cover. An ascent in these parts is a different thing from one in Scandinavia or in Switzerland. The obstacles are first the swamps round the foot, then an almost impenetrable forest-belt. Once above the forest it is generally not difficult to reach a considerable height. The scenery from one of the mountains is well worth the trouble of the climb. Eastwards the endless pampas, in the west the Andes in all their splendour, and between the hundred smaller

and larger lakes—everything the result of the great Ice Age!

"From Ferrier's farm I also went to Payne, a mountain differing widely from the rest even in its outlines; even a non-geologist can guess that special forces have been at work in its creation. The lower part is nearly white, a light granitic rock crowned by a cap of black slates. In fact we have here the ideal laccolite. On eruption the glowing magma did not break up through the crust, but only pressed up the slate like a vault. The way to Payne was for the most part difficult. We started with three horses and tents and provisions for a week, but after the first day had to leave the tent and everything not absolutely necessary behind. Our route followed the south edge; the forest grew worse, step by step we struggled with prickly berberis thickets. After six hours' hard work we had advanced a distance of hardly two miles, and the horses, not used to this kind of work, refused to continue. Our position was not an enviable one; it would cost us at least four hours to get back to a place where there was any grass for the horses, and hardly more than a mile ahead we saw open ground. But the thickets grew worse still; we were shut in by a steep mountain-wall on one side and a small lake on the other. This last, unknown before and named by us Lago Skottsberg, now became our refuge. We resolved to take to the water, and this proved possible. Once brought down, the horses were able to wade along the shore most of the way; only twice were we forced to unsaddle them and let them swim. The small, beautiful lake is visited by terrible

tornadoes, which drive its waters into columns 300 feet high.

"At last we reached a camping-place with good pasture, and round the fire we soon forgot all our troubles. But the night brought others. Hardly had we crept into our sleeping-bags and gone to sleep when snow began to fall. Only after some hours did I realize that I lay shivering with cold in a pool of water, which was trickling in from the top. The rest of the night was not very comfortable. When we rose we found several inches of snow on the ground. In spite of the difficulties, our survey of Payne yielded very good results, uniting a highly interesting scientific work with a visit to a splendid mountain district.

"Our route the next day led first through a beautiful forest, easy to march in, where deer now and then looked at us curiously from behind the trees. Once we suddenly came across a whole family, peacefully grazing in a small depression. They did not show any sign of fright, and we sat down to light our pipes, waiting to see how they would behave. One after the other they now came to look at us; advanced till they were eight or ten steps off, went round us, and then walked off with an expression of sheer amazement. A fine buck came so close that the smoke from my pipe reached his nostrils; he shook his head and turned aside, evidently not appreciating the tobacco. To kill these animals, save to appease our hunger, would not have been possible for me; they were much too confiding. But our way led us higher, and now, suddenly, the aspect of nature changed. We had reached the edge of the forest;

below lay a deep canyon, its upper part filled with a glacier. We descended and followed the ice up the valley, and now stood in the heart of Payne so to speak. All round precipitous walls rose, the narrow valley by which we had come had disappeared behind a protruding piece of rock ; nowhere was an exit visible. One stands as in a hollow mountain; the interior is worn away, the outer cover is partly left. This peculiar circumstance is explained by the geology ; the interior consists of the readily crumbling granite, the cover of the more durable and resisting slates. All the day a never-ceasing cannonade saluted us ; masses of ice tumbled down the precipices all round, and were welded together on the next ledge to form a new glacier, slowly advancing till a new barranca caused a repetition of the same phenomenon. On our return some days later to my great astonishment I caught sight of a snow-white deer, which rapidly disappeared into the forest. The following days I crossed the place in all directions without finding any trace of it. Without doubt it was an albino variety of the common huemul, but as I had never heard of anything like it I very much wanted to get hold of the remarkable beast.

"After I had finished my work round Payne I moved my camp northward. Our way led west and north of the charming Lago Sarmiento, a lake eight and a half miles long, lacking superficial outlet of any sort ; only some insignificant streams empty into it. The water, clear as crystal, deep blue and brackish, the constant temperature, great depth, and the large deposits of calcareous tufas indicate that forces other than the

ordinary ones of nature played a part when it was formed. Together with some alkaline and carbonated wells in the vicinity, it exhibits the last remnants of a post-volcanic action that followed upon the outburst of the immense eruptive masses in the neighbourhood.

"On Christmas Eve I came to a shepherd's house, and stayed there to give my horses a rest."

From there Quensel crossed the Baguales range, using a pass situated west of the one by which we came down, went to Cattle's place, and made the boat journey on Lago Argentino already described.

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When I arrived at Ferrier's *estancia* Quensel was ready to leave ; he intended to go straight to Ultima Esperanza to complete some observations of the previous summer. Ferrier was just expecting visitors, a large party from Otway station, and followed Quensel expecting to meet them on the way. Thus I was left quite alone in the house. I was suffering from a bout of influenza and went to bed early. But my rest was soon disturbed, for hardly had I put out the light when somebody knocked at the door : the whole picnic party was there, ladies, gentlemen, and children, greatly astonished at not finding Mr. Ferrier at home! He had evidently passed them in the brushwood, and I had to take charge of them. There was no cook, as Ferrier prepared his food himself, so as soon as I could I got some clothes on, went out in the kitchen, and arranged a quick supper for eight persons. All the blankets and pillows of the house were collected, and gradually all settled down. The next day,

however, after breakfast, Ferrier returned and I was relieved.

With some provisions in our *maletas* Pagels and I started on the 13th in order to penetrate as far west as we could. Ferrier had lent us fresh horses, and after a fine gallop across his estates we came down to Rio de Grey (Rio Blanco), the outlet of Lago de Grey, incorrectly called Lago Hauthal on the Argentine maps. With the assistance of a Swede, Mr. Hülphers, in Patagonia known as "Klondyke-Hans," Ferrier had made a hang-bridge across the deep and rapid river. We carried our things across, swam the horses, and got into the saddle again, following the river till we came within sight of the lake. Between the trees we saw some fine icebergs, coming from the glacier in the north-western end. Close to the south end empties a river, bearing no name on the maps; we called it Rio del Hielo, or the Icy River, for it comes from the inland ice.

It was a laborious ride. At first the mountains left a narrow space, overgrown with shrub-wood along by the water. We pushed through, often leading the horses; but the barranca rose higher and higher, heaps of blocks barred the way, the horses injured themselves and bled, which I did not at all like, as they were not mine. The forest became closer and closer, the thickets of *leña dura* (*Maytenus magellanica*) so dense that we hardly saw the horses, which we dragged along by the *cabresta*. With slabs we built a road across the last pile of stones, and I felt relieved when we had the animals safe on the other side. Once more the ground became more even; a beautiful roble forest with a carpet

of grass appeared ; but after we had passed it we found the way barred for horses. The mountain ran out into the water, which here forms some rapids, and we made up our minds to camp and continue on foot the next day. We climbed part of the obstacle, and came on to broken ground, woody ravines alternating with small open spaces covered with grass-tussocks. The evergreen beech became more and more frequent. After a march of several hours we came to an even, gravelly plain, over which Rio del Hielo winds, and here the scenery was most imposing. The river flows from three different tongues of the inland ice. Opposite us was the *nunatahk* called Cerro Zapato, further north the perfectly white Cerro Blanco, and in a north-easterly direction the Payne Mountain shows quite a new aspect. We followed one of the rivers up to the edge of the ice, for with our equipment we could not get further. I think it would be possible to cut across here to the Pacific. The distance as the crow flies to Peel Inlet cannot much exceed eighteen miles, but the ice is full of crevices.

After twelve hours' hard walk we were back at the starting-point, and spent a second night there. I had reached my goal and we could return. Down at Rio de Grey we had a passage of arms with the horses, who refused to swim ; Pagels' horse broke the *cabresta* and ran away from him, but was captured again. I have seldom looked so shabby as when we came back to the settlement. My old faithful rags that had hung on since Bariloche and were old then were now at their last gasp. But a pair of Ferrier's old trousers enabled

me to leave his place dressed like a gentleman. His visitors had gone, he was left by himself, and I stayed with him another two days; then I had to go back to Cerro Castillo. Here I found letters from Halle, who had passed by there some days earlier on his way to Ultima Esperanza, and the next day I went there with the rest of our *tropilla*.

Now one really knew one was in the civilized part of Patagonia—a broad cart-road, fringed with telephone poles, regarded with mistrust by our horses; here and there neat houses. We met many waggons and riders, but fortunately the locomotive of the company with its two big trailers stood still as we passed. Even then the mare nearly had a fit when she saw the monster. It was Saturday, and more than one traveller had already started to celebrate the holiday. We had just sat down by the roadside to rest when a swarthy figure came along, stopped and handed us a bottle, and did not leave us until we had taken two respectable pulls. After a while another fellow with another bottle appeared. We left the main track, the forest became finer and more lofty, and in the afternoon we arrived in Puerto Consuelo. Here Hermann Eberhard was waiting for us with his motor-boat, and we speedily ran up the narrow inlet to his villa. It is the cosiest place in Patagonia. Generally people do not take much trouble with their dwellings, and the stranger is astonished when he gets into Eberhard's house and finds himself surrounded by all sorts of European comforts.

The name Eberhard is famous in Patagonia. It was to a virgin land that Eberhard senior, late captain

Last Hope Inlet.

of the port in Port Stanley, came in 1893 to try his fortune. We made his acquaintance in Punta Arenas in February 1908. Deeply interested in natural science he opened his home to all the explorers who came to these parts; Quensel also had been his guest. When we came back from the Channels in June we heard of his sudden and unexpected death. His son follows in his footsteps, and all who know him hope that the plot to deprive him of his camp will fail. On the occasion of the great auction in 1905, Captain Eberhard turned to the Government claiming that an exception for his piece of land ought to be made as he had explored the country and was the first colonist there. The Government proposed to the congress that he should get permission to buy his ground privately. In January 1906 this proposal passed the Senate, but the House of Deputies had not taken up the question yet. Therefore young Eberhard felt the ground anything but safe under him. Quensel and he had just returned from the boat journey; they had run into Worsley Sound and discovered two unknown inlets called Resi and Gesa; they also brought back a sketch-map.

What especially has drawn scientists to Ultima Esperanza is the famous "Mylodon" cave, situated in a barranca some few miles from Puerto Consuelo. Here, fifteen years ago, Captain Eberhard found a most remarkable skin with small round bones embedded in the hide and covered by long coarse yellowish brown hair. It hung on his farm more than a year, nobody suspecting its immense scientific value—travellers cut off a piece as a souvenir, and O. Nordenskjöld also brought

a piece to Sweden. Great was the astonishment when it was found that the skin had belonged to a giant sloth, and all sorts of rumours that this animal was still living in Patagonia were set going. At the same time the attention of the scientific world was drawn to the find, and in 1899 Mr. E. Nordenskiöld went there to make excavations. A fine collection of bones and other remains of the big sloth, a *Glossotherium*, and many other animals, was brought together; in the upper strata he even found traces that a pre-historic human race had lived in the grotto. Close upon this Professor Hauthal of La Plata made an exploration of the great cavern, and in spite of the Glossotherium occurring only in the lowest stratum, he and his collaborators came to the conclusion that the sloth had probably been contemporaneous with man, and even domesticated by him, for in one corner of the cavern a big deposit of dung, suggesting a stable, was found. However, none of the persons who studied the place or the deposits believed that the animal was still living in Patagonia, which did not prevent a big English newspaper from sending an expedition under a young man, Mr. H. Pritchard, in order to capture a living specimen for the Zoo. This was in 1900. I do not expect the results of the expedition were commensurable with the expenses. There is much work left in the cavern. The floor is partly covered with a barrier of huge blocks which have fallen down from the roof since the deposits were formed; by removing them the layers must be found quite undisturbed. It is impossible to get an idea of the stratification in the

remainder, for all sorts of people have been there digging without any method collecting curiosities which are sold in Punta Arenas. Our scheme did not embrace a new survey of the place, which is likely to cost much money and require considerable time.

Naturally I would not leave Patagonia without having seen the famous cavern, and consequently we rode there. It cannot fail to produce a deep impression: the refuge of extinct animals and human beings. It is about eighty feet high and extends nearly 500 yards into the mountain. Large stalactites hang down from the roof. The very first glance shows how everything has been turned upside down by the reckless diggers. The so-called stable is still visible, and it is easy to get fine specimens of dung. There was also plenty of hair belonging to the curious beast, the Glossotherium. After we had seen enough of the great cavern we walked along the barranca on the look-out for new discoveries. A shepherd has told Mr. Eberhard, that he had found a second cavern but refused to give any details, waiting to dig out curiosities and sell them without partners. The forest is dense and we had to seek a while before we found the entrance hidden under the trees. This cavern also is very beautiful though only half the size of the original one. It was evident that the shepherd had done some digging there, but probably without result for the soil does not seem to contain anything at all. However it is necessary to make proper investigations.

Before returning we visited another cave, a narrow crevice, where we had to crawl in on our stomachs.

There was not much air, just sufficient for our piece of candle. Eberhard had found a funny locust in there living in the darkness. Neither eyes nor bright colours are of use to it; it is half blind and nearly colourless. As soon as we had got a number we crawled out again, not without trouble, for the stalactites got hold of our clothes like giant claws. The nature round Ultima Esperanza has a certain stamp of Northern Europe and I do not at all wonder that Europeans thrive better there than in other places. I myself got very fond of the place and deeply regretted that lack of time did not permit us a longer stay than a day and a half.

On February 22 we said farewell, and after some hours' ride passed the Argentine frontier, going on to Meyer's estancia on Rio Turbio, where we had been invited to spend the night. Large heaps of empty champagne-bottles adorn the place, showing that sheep-farming in Patagonia is a profitable industry. We found Halle here. He was pleased with his time spent and nothing prevented us from riding directly to Punta Arenas, only three days' journey. The road bends over a monotonous barren plain, over which a single basaltic mountain, Morro Chico, rises. It was dark when we reached the small hotel; we did not get much sleep, for the customers made a terrible noise all night. At eight o'clock we were in the saddle again. All along the track lay dead horses; here and there a fox was celebrating a feast, but our dogs soon laid him alongside the carrion. We halted at Laguna Blanca, another lake without an outlet, in order to get some food, but were soon off again for we had a long march before us.

THE "NEOMYLODON" CAVE, LAST HOPE INLET.

We had resolved to make a small *détour* from the straight track and visit Otway Station, where we had been invited by the Saunders family whom I met at Ferrier's farm, as the reader no doubt remembers. We thought of leaving our horses there and even hoped that Mr. Saunders, a representative of a very substantial company, would buy them.

Fortunately it was not too dark for us to find the side-path to the farm, which we expected soon to strike. The horses were tired, and to our surprise hour after hour went by without any trace of human dwellings. We alighted and led the animals, trying to follow an indistinct cart-track. We got on all right for a while, but lost it in the drifting sand on the shore of Otway Water, which we now saw again or at least heard, for it was pitch dark. At random we groped our way when suddenly we heard a dog bark. Good! where there is a dog there are also people. Led by the sound we found the place—a dog tied to a pole; we shouted but got no answer. Later we found out that some men working at a fence had a tent there. Probably they were frightened and dared not answer; it is impossible that they did not hear us.

There we were. It was so dark that we could not see five yards: we spread over the ground signalling to each other with matches and finally found another cart-track. We mounted and made another move but suddenly the horses stopped; we alighted looking for the reason—a fence cut straight across the road. That was a funny road; there was no gate and we followed the fence in the direction we

considered to be the best. It turned at a right angle and there we struck a proper road running south. We had almost given up all hope of finding Otway Station, believing that we had passed it at some distance, and we did not know where the road led to. Then I thought I saw a house ; my imagination provided it with doors and windows, I saw a light—and was greatly disappointed when it was reduced to a big piece of rock. I lit a match and looked at my watch ; it was the witching hour of midnight.

Our surprise and joy were great when half an hour later a real light was seen ; we set our horses going and reached Otway Station. We had gone exactly the route we ought, but were mistaken in the distance. We were almost ashamed to knock at the door at this late hour, but needs must and in Patagonia the stranger is excused ; he may come at the strangest hours of the day—or night. One of the young ladies came down and made a cup of cocoa, and as soon as we could we slipped into bed, for I will not deny that we were pretty tired.

February 21 was a day of great satisfaction : Mr. Saunders did not really want any horses, but nevertheless bought them and paid well. A great anxiety was thus removed, especially we were pleased to know our horses were in good hands. They had carried us across swamps and streams, over mountain-passes, where stony ground, snowfields and floating soil succeeded each other ; up barrancas, where the least false step would have proved fatal, and we had grown to like them and even parted with them with regret.

Quite sad I saddled Solo for the last time. Our riding horses turned with a neigh to their comrades; they must carry us the last few miles to Punta Arenas from where they were sent back to join the tropilla. After a nice canter we were down on Cabeza del Mar, a bay that once communicated with Otway Water. From the head of the bay the road cuts down to the Magellan Straits following along the water to the town. It became more and more lively on the road; the number of public houses increased rapidly, and in the twilight we rode into Punta Arenas, where our country horses had much to think about. We went straight to the Swedish Consulate and stopped below its windows. It was some time before people recognized the bearded highwaymen. The last act was played out; for the last time we unsaddled. "Where do you come from?" people asked us. And as we answered "from Lago Nahuelhuapi" they thought we were joking with them. But it was true.

The distance from Bariloche to Punta Arenas is 1358 miles, covered in fifty-six march-days, which gives a daily average of 24·25 miles. Counting excursions the total distance amounts to 1640 miles.

CHAPTER XIX

THE BEAGLE CHANNEL

In Punta Arenas everything looked the same. Times were still bad though somewhat better than in the preceding winter when paper money was worth nothing—the peso was then down to sevenpence instead of eighteen; now it varied between nine and ten. The great fluctuation in the value of Chilean money is of course a great drawback to commercial development; one never knows from day to day how much one has, and the first look in the morning paper is at "el cambio," printed on the first page in large type. Not a few persons speculate in money, and more than one fortune has been made only by buying and selling notes. I believe the market has become more steady now.

Long in advance we had made preparations for our last expedition, the visit to the Beagle Channel. "El apostadero naval," the naval station, had a new chief, for Mr. Rojas had been pensioned and was succeeded by Rear-Admiral F. Valenzuela. He had got orders from Valparaiso and received us with great kindness, offering us the small but convenient steamer *Porvenir* for the trip. The Government had purchased it during the winter, when, owing to the bad times, more than one Punta Arenas ship changed owner. The officers started at once to equip the vessel.

The Beagle Channel looking west.

Ushuaia and Martial Mountains.

Glacier in N.W. Arm of Beagle Channel.

The town was in a state of rejoicing. It was a carnival time and festive processions passed through the windy streets, but I think it was a hard job to raise carnival-spirits on the shores of Magellan Straits. Dancing saloons had been rigged up for the occasion, and were filled all night long. We had no time, however, for things of that sort. We had to go through all the luggage sent from Puerto Montt in October; another equipment had to be got together and I was running all day long between the ports, the telegraph-office and the Argentine consulate to arrange an important piece of business, the transport of ourselves and our luggage from Punta Arenas to Buenos Aires. There is regular communication between the latter place and Ushuaia. One of the steamers, however, had just run ashore on the Atlantic coast, the other, *Primero de Mayo*, had just passed on her way south, and the Argentine Consul, Mr. Margueirat, told us that her commander had orders to take us on board if this would suit us. But she ought to be back in Punta Arenas long before we had finished our exploration in the Beagle Channel and we had to leave without knowing anything for certain. I wired to Buenos Aires asking if there would be any other possible ship besides the *Primero de Mayo*, but could not wait for the answer.

The summer had been uncommonly dry, it was difficult to get water, and not until March 3 did the *Porvenir* get her supply. In the evening we went on board, and before sunrise were under way towards the Magdalena Channel. The commander was Mr. P. Acevedo, captain in the navy, an able officer and good companion. In a

short time we got into the familiar old fog again. It is said in the tale of creation, that the water in the air was separated from the water on the earth but in the west of Tierra del Fuego one is inclined to believe that the separation never was completed, so difficult is it to see where the sea ends and the sky begins. On clear days the magnificent Mt. Sarmiento, the highest peak in Tierra del Fuego, shines like a gigantic beacon visible far north of Punta Arenas on Elisabeth Island at a distance of ninety-six nautical miles. We anchored the first night in Puerto Barrow, and found time to go on shore; I had never visited this part of Tierra del Fuego before. At dawn we weighed anchor. The weather was not nice, but not bad, and in any case good enough to clear the sometimes critical passage round the Brecknock peninsula. For a while one gets a broadside from the Pacific, which for a small steamer may be dangerous. We had vivid recollections of the Swedish expedition in 1896, whose journey in the *Condor* was nearly disastrous owing as far as I can gather to the carelessness or ignorance of the officers. The open passage with its black, storm-beaten rocks and reefs produces a terrifying and desolate impression. The whole business only lasted a couple of hours and then we came into smooth water again. We had just entered the Brecknock Sound, when we met the *Primero de Mayo* on her way to Punta Arenas—far too early for us; we saluted her with the flag, continued through Whaleboat Sound and anchored in Puerto Fortuna on the north coast of Londonderry Island.

We had heard much of the beauty of the Western Beagle Channel; but it almost surpassed our expectations. It is mainly the same sort of country as we had seen before with steep shores covered with evergreen forests or bogs and with snow-clad crests and summits. But down here a new and important feature is added, the glaciers. In the Patagonian Channels it is only in the inlets penetrating into the main range of the Andes that the glaciers come down into the sea. But in the west part of the Beagle Channel nearly every valley is occupied by a blue stream of ice coming down through the forest and causing that contrast between the eternal ice and eternal green extolled by Darwin and all travellers after him. Not only are the larger valleys that run down into the sea thus ice-filled but any small depression on a mountain-side has become a refuge for a wee tongue of ice.

As we wanted to see a little more of the glaciers we went into a bay called Glacier Sound. Probably no ship was ever in here, for the depth was unknown. We sounded, but the water suddenly shallowed so that we ran aground on the loose clay. Of course we got off again. Unfortunately the way to the glacier was barred by closely packed drift-ice, so we soon left the place and went to spend the night in Romanche Bay. We had now reached the most magnificent part of the Beagle Channel, the Northwest Arm, where glacier follows upon glacier. Opposite Romanche Bay there is one especially worthy of attention. Blue as only ice can be, it floats out over the mountain ledge, sending a vertical tongue down into the water; from the edge

higher up the river rushes out of its vault, at once forming a waterfall playing with the miniature ice-floes. The condition at the Darwin glacier further east were very favourable, making it easy to study the moraines as well as the vegetation round the ice border. Nature itself had come to our help. The ice does not extend down to the water, but ends in the forest. Some years ago the river changed its course owing to some accidental damming-up; the obstacle disappearing, it returned to its old bed again and left the new one free of access. It formed quite a natural road across the forest and we could walk up to the ice very comfortably. The distance from the ice-border to the first stunted trees is about ten feet.

After a short visit to Yendagaia, we anchored in Lapataia, a place well known to me, where I had spent some time with Dr. K. Andersson in 1902. The saw-mill was still there, but the old manager had gone long ago. It was Sunday and work was stopped, but we met the new boss and asked him to lend us a boat, for Quensel and I intended to pull across Lago Acigami or Roca, as the lake north of Lapataia is called. We saw at once that he was a stranger in the country, and we chose English to speak with him; however Quensel and I exchanged some remarks in Swedish and at once he joined in telling us that he also was a Swede, by name Lundberg. Another Scandinavian, a Norwegian, also worked in the small saw-mill.

The next morning we pulled up a rapid stream, the outlet of Lago Acigami. Without warning one is out on the bosom of the lake, hitherto hidden behind

dense foliage. The eastern shore slopes gradually and is covered with dense forests down to the water, into which the trees dip their branches. The western shore is very different, rising abruptly like an immense wall of stone with snow-patches in all crevices to a very considerable height; the highest peaks, nearly 4000 feet, cast their dark shadow over the whole lake. It was rather strange after an absence of six and a half years to plough the waters of Lago Acigami once more —once more to catch sight of the pretty points where we rested upon the oars to breathe. Probably I shall not come back for the third time. . . .

The boundary between Argentina and Chile crosses this lake, cuts straight down to the Beagle Channel, following it to the Atlantic. In the morning we started in Argentina and landed in Chile at the other end of the lake. Here we had a hasty meal, standing, or even running about to get clear of the innumerable mosquitoes. The Acigami-depression is continued by a broad valley of exactly the same nature as the Betbeder Valley, traversed by a river. The bottom is impassable on account of the swamps and we worked our way through the forest alongside it till we reached a point from where we could overlook the neighbourhood. We made out that we were in the Rojas Valley, whose river we had discovered the previous year, and thus had reached our goal. The same night we were back on board.

To judge from the big mussel-banks Lapataia was once a main resort for the Yahgan tribe. Halle made some excavations and found some bone-prickers.

The next day we continued eastward. We saw Ushuaia at some distance, but left it behind and went into the passage between the Navarin and Hoste Islands, the Murray Narrows. We knew that the English mission station formerly installed in Tekenika Bay had been moved to a place opposite this, and found it in Douglas Bay. There is no shelter here from the prevailing wind, but otherwise Nature is prettier than in the old place. A heavy sea was running, but soon a small yawl came from the station pulled by two Indians and in the person in the stern I recognized the English missionary, Mr. Williams, whose acquaintance I had made in Tekenika in 1902. He was greatly astonished at seeing one of the fellows from the *Antarctic* once more. We followed him ashore. What an agreeable contrast between this place and Dawson Island. Here the last remnants of the Yahgan tribe are collected, numbering a hundred and seventy. Is it possible that only seventy-five years ago their fires blazed all along the Beagle Channel and round the archipelago of Cape Horn? They have been extinguished for ever. But before all the Yahgans gathered on the stations the French Cape Horn expedition spent one year in Orange Bay; quite a colony of Indians stayed with them and were studied from every point of view. I must also mention the valuable observations on their habits and language made by the late Thomas Bridges of Ushuaia, through which we possess a fairly complete account of this people. In Douglas Bay they are very well treated and get permission to make long excursions hunting and fishing. Mr. Williams is a practical man,

whose enthusiasm for preaching the gospel has not led him astray, and the Indians seem to have confidence in him. He speaks their language fluently—well, this might be considered a matter of course, though the Salesian padre on Dawson Island hardly knew a word of it. We had to leave Mr. Williams' pleasant home helter-skelter—for suddenly a south-west gale came on and it was all we could do to get back on board. We had to weigh anchor at once and seek shelter under Hoste Island, where we anchored in Allen Gardiner Bay, on the same spot where the lamented *Antarctic* lay in 1902. There were hardly any traces of the mission station, for all the houses had been moved to the new place.

Here Halle had an important task to fulfil. Dr. J. G. Anderson had found fossilized wood and shells embedded before the folding of the Fuegian Cordillera took place; thus an investigation of the fossils would give certain indications as to the age of the mountain chain. The collections were lost in the *Antarctic*, and we had come there to get new ones. Halle was left there with a tent, a boat, provisions and two men. We on the *Porvenir* went south. We were interested to visit the old station in Orange Bay; the commemorative pyramid with its marble plates was left intact and a few steps from there was one of the pillars of the magnetical observatory. At night two boats of Indians came; they asked us to take them to the Wollaston Islands. They were abundantly supplied with provisions, flour, sugar, &c., and had also brought a rifle. We went there the next morning. The southernmost of

these Islands is Hoorn Island with the famous cape. The forest is limited to small groves and thickets and the vegetation much reminded me of what I had seen in certain places on the West Falklands. We only landed at two places and then crossed again to Pack-saddle Bay, as Quensel wanted to study some of the localities where the French expedition had been. When we came back to Tekenina we found that Halle had got comrades, several Yahgans, who had made a hut of sticks and bundles of grass. They were on their way to the mission, but could not help stopping, curious to see what the white men were doing. One of the sailors from the *Porvenir* had shown a rifle to them, which made them come to Halle assuring him of their exceptionally friendly sentiments. He was pleased with his results, and in the afternoon of March 13 we went to Ushuaia. The capital of Tierra del Fuego has a very pretty situation on the channel at the foot of the Martial Mountains and everywhere surrounded by roble forests. The harbour is formed by the woodless peninsula, where the houses that once belonged to Mr. Thomas Bridges' mission station are still left.

Ushuaia is of importance as the Argentine deportation-station. When I was here in 1902 the deported were just building a new prison, which was finished now long ago. The chief, Major Herrera, came on board and welcomed us in the name of the Governor; he and the judge were the only officials left, for all the rest had gone to Buenos Aires in the *Primero de Mayo*.

During the seven years that had gone by since my first visit the place had been greatly developed. A new

street behind the strand " Avenue " and several buildings, above all a new police station, had been added, but the Government House looked as shabby as ever and the jetty was even more ramshackle than before. Street lamps and policemen had increased in number and my old friends looked well and had grown fat, which proves that the prison gives sustenance also to its employees. It was indeed funny now and then to meet a face, half forgotten in the mists of past years. Naturally there was a very hearty welcome, and we gathered in Club Ushuaia—another step towards culture—and drank a toast to the merry and unexpected encounter.

We had not much to do here, but I wanted to return to a place where I made some fine collections in 1902, and Halle went to look for ancient shore-lines, indicating a post-glacial upheaval of the land. Nature in this part of the Beagle Channel is rather different from that further west. The total amount of rainfall is much smaller and the evergreen beach has nearly disappeared altogether. The mountains get lower, the Martial range is the last prominent part, where a miniature glacier may be found at a great height; the highest summit, Mt. Olivia, 4350 feet, attracts attention through its peculiar form. We made an excursion to a little stream coming from the foot of this mountain; in the forest it forms a small waterfall; round it grow some fine evergreen beeches and there is an uncommonly rich cryptogamic vegetation. But then we had no reason to stop in Ushuaia, so we continued on the 15th under loud protests from the inhabitants who wanted to keep us there.

We stopped some hours outside Gable Island, where Halle went on shore to collect quaternary fossils in the barrancas; the material gathered by J. G. Andersson had shared the fate of the Tekenika collections. We anchored in Harberton Harbour, where once more I found myself among old friends. Harberton is the only important farm on the Channel. When Argentina founded Ushuaia the English mission pined away, and when Thomas Bridges left his place, the Government gave him a piece of land at Harberton, where he and his sons have created a model establishment evoking the admiration of every visitor. Old Bridges had long been dead and only his son Willie was left in Harberton; his brothers had moved to a new farm on the Atlantic Coast, to which they had made a road past Lago Fagnano. In 1902 we saw many Ona Indians in Harberton; now only a few were there, as most of them had gone to the new farm, which is developing rapidly; soon it will be possible to keep a stock of 100,000 sheep there.

A few years ago the Onas were the absolute masters of Tierra del Fuego, where they had vast hunting-grounds. Most certainly they are a branch of the Tehuelche people—but prolonged isolation and the lack of boats in which to cross the Straits have gradually changed their habits and language. Their tall forms and good-looking faces remind one much of the Tehuelches of Patagonia.

If we consider how much this people has been in contact with white men, it is strange that they have not been properly studied until recent years. The

Salesian mission has a station at Rio Grande, but there are very few Indians. Some live on Dawson Island, some families live in the forest north of Lago Fagnano, but the rest are probably scattered over the land south of Rio Grande. Not a few work on Bridges' farm. We were told that Modesto who went with J. G. Andersson to Lago Fagnano and then with both of us to Gable Island had been promoted "Capataz" of the carts. Also Anikin was alive and lived as shepherd out in the camp. The brothers Bridges never put any constraint upon the natives. They simply received them, gave them work and of course tried to eradicate bad customs, but never kept them against their will or tried to convert them. The result has been mutual satisfaction. Messrs. Bridges had cheap labourers and the natives felt happy with some regular work. Their number is said to be slowly increasing at present—a glorious exception to the rule.

Originally we intended to spend much more time in Tierra del Fuego studying the Indians. But we had been informed that the well-known anthropologist and ethnographer, Professor Lehmann-Nietsche of La Plata, had made extensive studies and Mr. Bridges told me that an American, Mr. Furlong, had visited him and made observations on the natives. Thus we had reason to shorten our stay in these parts.

Among the interesting information I got from Mr. Bridges there is one thing especially worthy of notice. This was the story of a fourth Indian tribe, hitherto not known to me. It was called *Hush*, and lived along the Straits of Le Maire. Probably it was a branch of

the Ona people, perhaps originally a mixture of Ona and Yahgan, but had a language different from either of theirs and lived mainly on shell-fish and seal, wandering along the beach. Canoes were not used. There is no pure Hush left. In Harberton I saw an old man looking more like a Yahgan; his mother was of the Yahgan tribe. He had been married to a Hush woman, the last of her race, and was a widower; he had two unmarried daughters. They are the last of a small people that disappears without leaving any traces behind. We know nothing of their habits or of their language. Probably the Fuegians Darwin found in Good Success Bay belonged to this people.

We left Quensel in Harberton and continued east in spite of a falling barometer in order to try a landing in Slogget Bay. This place also had been visited by J. G. Andersson and is of importance for the determination of the age of the Cordillera. After having passed the woody Picton Island, we came out into open water. We got a gale of wind, and turned back to land on Picton, but had not gone far before the weather looked better again, so we started to run our old course. Slogget Bay is quite open to winds from south and east which often make landing impossible. Inside the point we saw a good landing-place, where two men soon appeared. We hurriedly got hold of some necessary things and rowed on shore. The two fellows were the only people left of the gold-digging company; one of them was in charge of the place and invited us to come to his house. We had an hour's hard walk along the broken rocks covered by decaying seaweed,

spreading a nauseous smell. The establishment looked very imposing: numerous buildings in two lines; near the mouth of a stream stood a large dredge; but no work was going on. The men were left to look after the place and keep the machinery from rusting. Still they did not know if the company was going to continue the work or not.

Gold has been found in many places in Tierra del Fuego. Nearly all rivers carry some though only in small quantities; and in several places in the loose coastal barranca the precious metal has been found. At such places at first very rich finds were made, but no one thought that these might be the result of the sea's carrying down and washing the sand for thousands of years and thus would not believe that after the first rich harvest had been gathered, it would become much more difficult to get anything. The gold fever broke out, hundreds of people hastened there. In the parts where we were just now it was Slogget Bay and Lennox Island that attracted special attention. The gold deposits had been discovered by a certain engineer, Popper, famous in the history of Tierra del Fuego, a real *conquistador* on a small scale. At first people washed by hand and the yield was good. But the future was not quite so golden. One company after the other was formed and expensive machinery purchased. This was the end of it all; the best finds had already been made and worked and the result was not even sufficient to pay the expenses. How many companies were formed I do not know, but in Punta Arenas alone there were thirty. During our visit to Patagonia the news-

papers almost every day contained the report of some "Sociedad aurifera" winding-up—only in name was it "aurifera." When we left Punta Arenas to go home people had still some belief in the establishment of Lennox Island, and the descriptions we got from some shareholders sounded very promising. One thing we understood that quite as much money had been spent in fine dwelling-houses, electric light, hot and cold water in all bedrooms, &c.—as in Cutter Cove, which I am not inclined to consider a good omen for the future. The man in charge of Slogget, Mr. Dafonte, could tell beautiful stories of the administration of that company.

We started at once to look for the fossiliferous deposits, which we found just east of the bay, near a solitary rock rising like a fantastic obelisk out of the water some fifty yards from the shore. It is very narrow at the base and gradually widens upwards. There is a marine flora the like of which I had not seen since we were on the Falklands, and I secured a very rich harvest. Both Halle and I were very pleased with our visit, and I am sure that Mr. Dafonte enjoyed the change offered by strangers' company. We returned to Harberton on the 17th to fetch Quensel and spend the night there. How comfortable I found myself in this truly English family! The conversation was abont old times, when the old *Antarctic* was at anchor in the bay, and I had to tell all I knew about my comrades and promise to convey greetings to them all. I said good-bye to Harberton with great regret, and it would be a matter of great satisfaction to go there again.

In order to return the kindness of the Argentiners

we went to Ushuaia and gave a dinner on board. The best of spirits prevailed in spite of the dispute between the two republics over the boundary farthest south, not settled by the Award. The Argentine experts had found out that the Beagle Channel as a boundary was all right, but the question was: where does the channel go to the extreme east? north or south of the Picton and New Islands? They insist that it goes south of these islands which should thus belong to Argentina.

When we left Ushuaia we had the most lovely weather, bringing out all the splendours of the Northwest Arm. Even Halle who is a great enthusiast for the Pampas expressed his admiration. The last night was spent in Puerto Edwards, a typical Fuegian cove on the south coast of the Brecknock peninsula. Without any adventure we rounded it, cast a last glance on the channel scenery that had become so familiar to us, and for the last time beheld the menacing silhouette of Cape Froward. Late in the evening, on March 20, we were back again in Punta Arenas.

Again I had to find out means of getting to Buenos Aires in the cheapest manner possible with all our bulky luggage. I went to the Argentine Consul, who told me that he had just purchased a steamer for his Government, and after some time it would proceed to Buenos Aires to be delivered to the authorities. I wired to the Minister of Marine and got his permission to use the steamer. But all this would have been quite unnecessary had I only got the telegrams waiting for me on my arrival. I got them the next day. There was an answer from the Argentine Government saying

that, as there was no steamer running from Punta Arenas, cabins on the first Kosmos steamer passing were put gratuitously at our disposal. Of course we were very grateful for this new proof of Argentine generosity. Our luggage was brought up by the above-mentioned steamer, which carried nothing else.

On the 25th we went on board the fine steamer, the *Thessalia*, and in the most agreeable weather and company we left Punta Arenas for good, the town of iron-houses, gramophones and cocktails, but also of strenuous work and commercial industry. It was not without regret we saw it disappear. How much friendship, sympathy and assistance had we not met with there. To the very last moment the Consul, Mr. Manns, whose home was always open to us, helped us in every way, and thanks to him and all the others, too numerous to mention, we could look back on a Magellanic Expedition brought to a happy end. On the 30th we arrived in Montevideo, where the Consul, Mr. Rogberg, came on board to welcome us and took us round the town once more. The next morning we were in Buenos Aires.

Already before we left Sweden Halle had made up a scheme to visit Rio Grande do Sul in Brazil before going back, in order to study certain deposits belonging to the *Glossopteris*-series that had been the object of his special attention during the journey.

I had planned another trip for Quensel and myself, a voyage to South Georgia, the remote island on the verge of the Antarctic Sea. I knew this island well enough, but had important reasons for a second visit,

Panorama south-west side of Lake Acigami. Tierra del Fuego.

"The Winter's back." Tierra del Fuego.

and Quensel very much wanted to see this supposed outpost of the Andes. Anyhow, it is closely connected with the region we had just left.

When in December 1903 the members of the *Antarctic* Expedition returned to Buenos Aires, rescued by the Argentine ship, the *Uruguay*, Captain Larsen who had got news of the Norwegian law against whaling was able to interest some people there to make a try south and later the " Compañia Argentina de Pesca " started. With the permission of Great Britain the company built a station on South Georgia and commenced work in 1905. We had generously been granted passages on one of the company's vessels. The s.s. *Cachalote* was ready to sail when we came to Buenos Aires, and on April 2 we again left the metropolis of South America and the civilized world.

CHAPTER XX

A WINTER TRIP TO SOUTH GEORGIA

AGAIN we are alone with sky and sea. The future looks bright, we lie flat on the deck in the sun enjoying our siesta, a company of five, we two, Captain Esbensen, his wife and brother-in-law, all three Norwegians.

Like the quiet flow of a river the first days went by. Then, suddenly the engines stopped. There was much wondering and asking of questions. We had certainly noticed that they had begun to make some unusual noise, but did not think much of it. A closer investigation supplied no explanation; they were set going again, but the noise increased more and more. Again they were taken to pieces, but it was impossible to discover whence the mysterious sound could proceed. By a mere chance the fault was found. One of the cranks was loose on the shaft and we could not continue until such a serious fault had been put right. The engineers shook their heads and set to work without delay. Disabled, we lay adrift, but the weather kept fine. Far off a full-rigged vessel passed at a good speed —how we did envy her! Two bolts from opposite sides were driven through the crank and into the shaft, but this work which took a whole day proved futile. The engine worked silently some few minutes, then the bolts were driven out by the rotation and we had to

stop again. A new dodge was tried; a bolt of steel being driven right through crank and shaft and clenched at both ends. The weather had changed and we knew that we had gone south. The north-west wind was blowing very fresh; there was a high sea running and we might get a gale at any moment. On deck the crew was busy rigging yards on the short masts and making sails out of old tarpaulins so that we might get some way on the boat. Those who had nothing to do fished for albatrosses with a hook baited with a piece of meat. The repairs took a day and a half, but the bolt, one inch in diameter, held for one night only and then was literally cut into three pieces. There was now only the slight hope left that we could make a still thicker bolt and also replace the axle-journal, filling in the semi-circular notches in crank and shaft, with a new one. If this did not hold, we could do nothing more. We could not get enough sail on to steer against wind and sea. Where would currents and waves bear us? Certainly not to South Georgia—we were already making jokes about our visit to Cape Town or to Australia. But long before that the sea would probably smash up the ship and drown us all!

Eager expectation could be read in all faces when the engines were once more set going. We were already at April 10 and ought to have been at our destination. Every five minutes we went to listen but no strange tunes were heard.

The storm came. Long enough had it threatened us. It was Easter Eve; and we took turns in balancing a big tureen in which the eggs for the traditional toddy

were beaten up. Why should we abandon a good custom merely because of being on board a sick ship in the South Atlantic ? The night was very uncomfortable. Our berths were situated just above the screw, which was revolving more in the air than in the water, and it was only because I was used to things of that sort that I was able to sleep. In the morning our yard hung naked, for the wind had robbed us of four of our five small sails. More than ever was it necessary that the engine should hold, and we did not venture to go at more than half speed. It felt like being on slippery ice and our anxiety increased when the fog came and with it the fear of icebergs, which according to the captain's experiences might turn up at any moment.

Again the engines started to be noisy, the above-mentioned axle-journal threatened to creep out of position and had repeatedly to be driven in again. Should we reach our destination ? Finally, on the 15th, the island came in sight. We had longed for it as if it were the Promised Land itself, and there it lay, the lonely isle, shining white, shimmering through the grey fogs ! It proved impossible to reach Cumberland Bay the same day and we had to spend another pitch-dark night on an angry sea and with a wretched on-shore wind. The fear of drifting ashore made us work out from the coast, which soon disappeared in a blinding snow-storm. The easterly wind died, but we got a gale from the north-west instead, and in the morning made the pleasant discovery that we had driven past Cumberland Bay. We also understood by our course that we had passed across the dangerous Nansen-reef,

THE NORWEGIAN FACTORY, SOUTH GEORGIA.

SKOTTSBERG. LARSEN. ANDERSSON.

A MEETING IN SOUTH GEORGIA.

where the *Fridtjof Nansen* struck some years ago and went down like a stone, nine people losing their lives. A mere chance had saved us from sharing their fate. The wind was too stormy to permit of our beating up against it, and not until the next day did we see land again. The points grew familiar to me, and in bright sunshine we passed Mt. Duse and turned into the cove. It was seven years since—I remembered a virgin Pot Harbour with luxuriant tussock-grass and roaring sea-elephants. There is the point where we found the big pots and the old boat; a small observatory now stands there. Now the harbour lies quite open to the eyes. A strong smell of whale-oil mingles with the stink of the numerous carcasses on the shore where thousands of screaming gulls and cape-pigeons have an everlasting feast. Some buildings are seen on the shore at the foot of an abrupt mountain-wall; they are half hidden by boats, coal-heaps and oil-barrels; people are running to and fro, funnels smoke, a whistle gives a hoarse prolonged note——

South Georgia which is of about the size of the Swedish Island Gotland, extends between 54° and 55° S. lat. and 36° and 38° W. long. A look at a map of the world readily suggests the idea that the island is part of a sunken mountain-fold, running from the Andes over South Georgia, the South Sandwiches and Orkneys, to Graham Land. The geological survey to a certain degree confirms this opinion, but the great depths between the different links in this broken chain are difficult to explain.

South Georgia is a much folded steep mountain-ridge, running north-west to south-east and cut by deep inlets on both sides. Its height probably exceeds 6500 feet though only very few summits have been measured with exactitude. The impression of the island is wild, but grand : the mountains are very steep, the summits sometimes have a rather fantastic shape and everywhere eternal ice and snow stand out against the black slates. The interior is more or less covered by a mantle of ice, the flap of which hangs down into the valleys, often reaching the water in the innermost corner of an inlet. Their mouths are the oases in South Georgia, where the plant-world thrives and animals have found means of existence.

It cannot be expected that a land with the nature of South Georgia should have a mild climate. The variations in temperature are very slight ; in the summer it is some centigrades above, in the winter some centigrades below zero—the average being a little lower than in the Falklands—and unsettled weather is the most prominent climatic feature here also, for the sunshine may be interrupted by a snow-storm, regardless of whether it is summer or winter. The strong south-westerly gales are terrible, nor are the local hurricanes less terrifying, rushing down the glaciers almost without a warning and threshing the water into a thick white smoke looking like fog at a distance. The annual fall of snow and rain is large. During the winter snow mostly falls, sometimes forming a continuous covering thick enough to hide even the tussock-grass. This is the same fine plant that we met with in the Falklands,

but in South Georgia it everywhere puts its mark on the coastal region; on the shingles there is a nice and uniform covering, but on the steep slopes it grows patchwise and shows great gaps where it looks as if it had slid down and landed in disorder on the debris below. The tussock-grass must take the place of both trees and bushes in South Georgia. It ends rather suddenly inland and is replaced by a scanty meadow- or grass-tundra, where some insignificant flowers are also seen. The cryptogamic plants play a more prominent part and are of great interest, as many of them have only been found here. South Georgia is the Juan Fernandez of mosses.

The flora of the sea is also very remarkable and indeed it was this that made me undertake a second expedition to the remote island. Most people are more attracted by animal life. The place of honour is held by the sea-elephant (*Macrorhinus leoninus*). It is the largest seal living, a plump, yellow-brown creature anything up to twenty feet long; only the old males reach this length, the females being much smaller and more slender. The name refers to the faculty of the male of blowing his nose into a short trunk when angry. This remarkable animal, of a distinctly ancient type, is confined to some islands in the south and has greatly decreased in number. It will probably prove necessary for the English authorities to forbid hunting him on South Georgia. I was told that American sealers do a good deal of poaching on the west side of the island. Other kinds of seals are also found, especially the sea-leopard (*Ogmorhinus leptonyx*); but the southern

fur-seal (*Arctocephalus australis*) seems to be extinct here. Bird life is abundant. Most of the species are oceanic; cape-pigeons and petrels have their nests round the black peaks, and on small "tussock-islands" the largest bird of the oceans, the big albatross (*Diomedea exulans*) breeds. Two species of penguins have small rookeries, amongst them the king-penguin, hardly less magnificent than his imperial cousin of the Antarctic. But one is still more attracted by the small land-birds, the edible teal duck (*Querquedula Eatoni*) and the small titlark (*Anthus antarcticus*), remarkably enough endemic in the island, merrily hopping about round the streams.

In a short while we were moored alongside the quay. Larsen's stout figure appeared; I had heard that after his visit to the South Sandwich Islands, he had been taken seriously ill. Now he looked himself again, and we slapped each other's backs properly. In the dwelling-house another old acquaintance received me, the cook of the *Antarctic*, Axel Andersson, who stayed in his kitchen, day in and day out, during the long severe winter on Paulet Island in biting cold, half choked by the nauseous smoke from the blubber. A remarkable encounter indeed; three old comrades re-united after seven years on one of the places where they had camped together. The place had changed more than we; I hardly knew Pot Harbour with its shores spoilt and its air polluted. With great satisfaction we found the low land to be free of snow, and the first excursion gave good results. Judge of our surprise when the winter suddenly arrived! It snowed day and night, and did

not stop until the ground was covered by snow, two feet deep, under which the plants remained out of reach. We comforted ourselves with the fervent hope that the snow would melt within a few days, and I started to work on the seaweeds, for here the snow could not hinder me. The results obtained gave me reason to be contented with the journey, in spite of the prophecy of mild weather never coming true, for it was not a passing snow-storm, but the long winter that had come in earnest. It is obvious that Quensel could hardly make any geological observations, but there was no help for it. Our good luck had at last abandoned us.

Larsen was kind enough to put a steamer, originally purchased to tow whales with, at our disposal for a trip round the fiords, but we put it off as long as we could hope to get suitable weather. Waiting, however, seemed hopeless and we set out. On April 24 the *Undine* left Pot Harbour—seven years earlier, also in Cumberland Bay the Swedish Antarctic Expedition had celebrated the deed of the *Vega*. It was the first fine day since our arrival. The island lay there, radiant in all its Antarctic beauty, with every summit clear and sharp. We steered out to the sea and then followed the coast for some distance, making a visit to the so-called Strömnaes fiord. There were three whaling steamers belonging to a Tönsberg Company, laid up for the winter. Larsen's company was all but alone on the island at that date, and the only one with a land station by means of which it is possible to make far more out of the whales than by floating boilers. They all come from Norway to spend the favourable season.

According to Larsen there is already to be noticed a certain decrease in the number of whales, and by-and-by the Governor of the Falklands will have to regulate the whaling in some manner or the Colony will lose an important part of its income. Whalers have now reached the Antarctic Islands also and there are stations on the South Orkneys and also on Deception Island, the famous old crater.

We continued north along the coast, passed the entrances of several fiords and entered the Bay of Isles. The fine weather was gone again, an easterly gale and snow and fog came after us at a gallop, and we anchored at the very last moment before an impenetrable mist had hidden land and water from us. Had not Captain Angell been so familiar with all corners here, the night would have been rather unpleasant. The *Undine*, which is built on very elegant lines and makes good speed, was once Queen Victoria of England's pleasure-yacht; in her declining years she still bears evidence of having seen better days. The large saloons and cabins with their real mahogany fittings tell us that we are not on board a common tug.

The bad weather continued, but we were able to spend the next day on shore. At night the wind increased, and in the morning we had terrible weather with a mixture of rain, snow, and hail. However, we resolved to set out and came out in the heavy sea round Cape Buller. Just before nightfall we ran into a shallow bay, called by the Norwegian whalers Rightwhale Cove. The wind grew more and more squally, a menacing bank of leaden clouds gathered in a westerly direc-

tion and the night was indeed anything but pleasant. We had two anchors out and the engines ready, but every now and then the captain went on deck to have a look at the situation, for the hurricane was so terrible and the strains on the chains so violent, that every moment we expected to see them break. In the morning the same conditions prevailed, and it was hardly possible to stand on deck. Through the white foam we heard the roaring of the sea-elephants in the tussock, but could not see them nor get the least glimpse of land, in spite of being so near. Now and then came a sharp and sudden snow-squall. It was a pity that we had not got an anemometer; the iron-rail round the bridge was bent by the pressure of the canvas, which perhaps gives an idea of the velocity of the wind. Down in the saloon we read or played cards and looked at the barographer, the index of which jumped a couple of millimetres at a time. In the evening the weather improved and we had a tolerably calm night. But alas! our time was up; we expected that the *Cachalote* would be ready to leave and with sore hearts we had to abandon our schemes of visiting the west coast. Settled good weather could not be expected, so although another snowstorm came on we left the harbour, and made for the station. The fog was so dense that after half an hour we had lost every landmark and wondered how we should find our way back. Then, as if by magic, the fog lay behind us like a wall and we were out in the sunshine. We found ourselves outside Strömnaes Bay and were soon back in Pot Harbour.

During our absence the three small steamers had been

out fishing and got several whales, two of them right whales (*Balaena australis*), but once more the cutting-up decks were empty and it looked as if we should leave South Georgia without having seen whale-fishing. The weather was still miserable and the *Cachalote* had soon taken in her cargo. But then prospects lightened. On the last of April the steamers were out again and came back in the night with one right whale and some humpbacks, and at once we made up our minds to go with one of them as many whales were reported forty miles from the coast. Hurriedly we took our oilskins and climbed on board, and the next moment the *Karl* started. She is a modern whaler, built of steel and specially constructed for the purpose; in comparison with her size (about 150 tons), the engines and winches may be described as very powerful. In the bows is the short, thick gun; it is loaded, and the point of the harpoon, where the shell is, protrudes from the mouth. From there a strong hawser goes down into the hull, where innumerable fathoms lie neatly coiled ready to run out.

From the mast-head single whales are seen blowing, but it is not worth while going after them, if one is sure that there is a school further out. Now we catch sight of one of the other steamers. With the glasses we see that her line is taut; evidently there is a fish on the hook, and soon we are amidst the school. Monsters dive up everywhere, swimming in long files, blowing and snorting, a little more of the fat shining back is seen, for an instant the "hump" is above water and then the beast disappears. They come and go all round,

Humpback Whale, upside down, South Georgia.

Three right whales, South Georgia.

not the least disturbed by our presence ; the water is thick with their food, small crustaceans and other marine organisms, and they are not inclined to leave their good feeding-grounds, for they do not understand that the " steel-whales " are armed to the teeth and are only waiting for a chance to spread death and destruction among them.

Now we open the ball. The small, bearded " gunner," who is also captain of the ship, takes up his position behind the gun. Three big humpbacks come swimming obliquely towards us : "Stop . . . hard port . . . slow ahead ! " With a steady hand he sights and fires the gun—shell and harpoon are buried in the shining back—a sudden jerk and the rope runs out at a tremendous speed ! As he dives the whale sends a cloud of blood from his nostrils ; then a dull report is heard, the shell has burst, and soon he rises to the surface dead. As the shot is fired the fuse of the shell takes fire and burns, casting the sparks backwards for four seconds ; then a spark reaches the charge, which instantly explodes and kills the whale, if the shot is a good one. Naturally it is important that the shell does not explode too early. The animal is hauled in under the bows ; a chain is fixed round the caudal fin and the beast is hauled up to the gunwhale. The rope of the harpoon is cut and so are the big wings of the fin, for they would check the ship's speed too much. A mark is put at the edge of the fin indicating that only *one* harpoon has been used ; the harpooner sets his private mark, the chain is fixed properly, the tail lowered, and we are ready for another shot. Meanwhile we have been able to follow the move-

ments of the other steamer on the battle-field, and this is not less interesting. They have got another whale, but did not manage him and he is swimming at quite a fair speed towing the vessel behind him. They disappear in the fog, and come out again after a while. The beast has still got strength left and, snorting blood, he joins two others and tries to keep up with them, but at last tires, is hauled within range and a second harpoon finishes him on the spot.

We set to work again and got another whale before dark. With a nice fish on each bow we turn back. Both are humpback whales (*Megaptera*); we have seen both blue and fin-whales, but were not equipped with ropes strong enough to hold them. They are not generally killed by one harpoon, but often run out the line to the end and set off at a tremendous speed, mad with rage. It sometimes happens that one must cut the line after a wild chase of several hours.

The day's catch is worth about £160, but had we got out sooner the sum would have been double. There are days when all the steamers come in with four whales each; that means money, and the harpooner has reason to be satisfied, too, as for every full-grown humpback he gets ten crowns extra; if it is a right whale he puts one hundred crowns in his pocket. But a good right whale is worth five or six hundred pounds. This species is nearly related to the big Balaena of the north. Its great value lies in the baleens which are from six to eight feet long.

Night has come and we must try to find the station. The snow-fog is very thick, the moonlight cannot

penetrate it. We have two whales to tow and progress is slow. Sometimes we lie down on a sofa, trying to sleep, but soon curiosity drives us out again to look at the weather. It is still snowing, and pitch dark—better to sleep, if we can, in spite of the heavy rolling.

I wake up as the engines stop and go out on deck to look. We are close on the shore, a mountain wall rises over our heads and all round there are masses of kelp. The captain does not know where we are, but after a while he realises that we have come too far south. We back out again and change our course, old landmarks appear, well-known snow-patches, and soon we are back in Pot Harbour which is asleep in the silent winter-night. It is 3.30 A.M. when we plunge into the snow-drifts to reach the house. Who knows if we should have gone to bed earlier had we been in Upsala. Yesterday it was May 1.* And a rather original one too!

The whales are moored round buoys and jetties. Most of them belly-up, showing the long, peculiar furrows. Some are so filled with gases that they look like balloons ready to burst. Now comes the slicing and stripping. Tail first they are winched up on to the cutting-up stage, where some men provided with long-handled knives, are ready to receive them. First the curious crustaceans—which live in their houses on the whale, profiting from his rich hunting-ground—must be plucked off; they are fine large colonies of Balanids, leading a very easy and comfortable life. Slice after slice of blubber is cut off, the fat round the intestines

* At the Swedish universities May 1 is a day of great feasting and rejoicing.

and the tongue are also taken, as well as the gigantic cheek-bones. The meat is edible if not very delicious. The blubber is sent to a machine which cuts it into thin slices, and then it is carried into the big tanks, where it is boiled down to oil for twenty-four hours. The cheekbones are sawn up and put into a closed tank, where steam under high pressure is sent in; the water is drawn off and the oil collected. The baleens are treated in a special house. They are well washed in a small stream, are scraped and brushed, dried, polished and packed into bags.

On May 4 the *Cachalote* was ready—as ready as she could get. The engineers had done all they could, but any day the new bolt might give, and Larsen dared not send the steamer alone to Buenos Aires, but let the *Undine* accompany her. It was a long journey as we had bad weather at first. It was very pleasant to stand on the bridge looking at the *Undine*, for she rolled so heavily that we sometimes could see the keel. Quensel had not felt very comfortable in the stern of the *Cachalote* and preferred to go by the other steamer, where he got a berth amidship, but nothing could make us leave our old vessel with her excellent kitchen. The table of the *Undine* was very simple. One day we killed a fat goose and by means of signal-flags the passengers of the *Undine* were invited to come on board and have dinner with us. In order to annoy them we also signalled the word "goose." Come they could not, for it was impossible to put a boat off. They answered us very impolitely!

After some days the engines began to give trouble and

we tried to get a hawser on board the *Undine*, but failed owing to the heavy sea. She was to tow us when repairing. The next afternoon we repeated the experiment with better success. On May 14 land was seen, and the day after we were moored in the Boca, one of Buenos Aires suburbs, and I dare say all of us felt pleased that the somewhat adventurous passage had come to a happy conclusion.

In Buenos Aires we had to wait some time before there was a Swedish steamer. Halle came back from his journey; he had not been troubled by snow or storm, and was pleased with everything. On May 23 we went on board the *Crown Princess Victoria*, belonging to the Johnson Line. We had a delightful run and shall always remember the captain, Mr. Camp, the officers and crew, with feelings of deep gratitude. It was agreeable to get a good rest under a tropical sun after so much hard work. But better than anything we had experienced in our various travels, was the perfume of the young birch trees from the Scandianavian skerries, which came in sight on June 21. On that same day we arrived in Christiania, and by different routes the members of the expedition hastened to their homes in Sweden.

INDEX

Acevedo, Captain P., 297
Acigami, Lake, 300; boat excursion on, 301; high summits west of, 301
Aconeagua, Mount, 132; river journey along, 129
Adalbert Channel, passing through, 87
Adam, Mount, ascent of, 21
Admiralty Inlet, nature of, 38
Albatross Channel, passing through, 87
Albatrosses, fishing of, 315
Alerce, 108
Allardyce, W. L., ix. 3, 31
Allen, A. L., x.
Allen Gardiner Bay, visit to, 303
Alm, steamer, 90
Alstrœmeria, 210
Ancud, aspect of, 106; cathedral, 108; harbour, 106; plaza, 108; schools, 107
Andersson, A., 320
Andersson, J. G., vii. 40, 303, 306, 307, 308
Andersson, K., 300
Andrew Sound, visit to, 87
Anita Channel, narrow passage in, 82
Antarctic Expedition, 40
Anthus antarcticus, 320
Antiguos River, adventurous descent to, 216
Arauco district, geological survey in, 126
Arauz Bay, seeking refuge in, 74
Arctocephalus australis, 320
Argentino, Lake, boat excursion on, 272; icebergs, 277; storms, 275, 276
Aristotelia magui, 137
Armadillo, 209
Arrayán, 195
Asado, 43, 169
Aspero, Mount, ascent of, 235
Auchenia huanaco, 42
Aysen Valley, 193; excursion to the Pacific, 194; roads, 193, 194
Azara, Lake, boat excursion on, 234
Azara lanceolata, 195
Azopardo River, camping at, 39; canvas boat on, 57
Azopardo Valley, 41

Baguales Mountains, South Patagonia, crossing of, 267
Baguales Range, Aysen Valley, crossing of, 194
Bahia del Padre, visit to, 143
Baker Company, 86
Baker Inlet, visit to, 86
Baker, River, crossing of, 239; sources, 225
Balœna australis, 324
Balanids on whales, 327
Baleens, treatment of, 328
Bamboo, 115, 196
Bariloche, visit to, 162; departure from, 165
Barrow Cove, visit to, 298
Bay of Isles, visit to, 322
Beagle Channel, ancient shore-lines in, 305; glaciers, 299; nature of east part, 305; of west part, 299, 311
Belgrano, Lake, camping on, 229; boat excursion, 233; nature of, 233; shallow part, 237
Benney, Messrs., x. 21
Berberis buxifolia, 56; *Darwinii*, 115
Berthon boats, excursions with, 41, 45, 247
Bertrand, R., x.
Betbeder Valley, survey of, 40, 51
Billing, J., 127
Bismarck Glacier, remarkable nature of, 273
Blanco, Mount, 236 (west of Lake Belgrano); 287 (west of Payne)
Blechnum magellanicum, 84
Boklund, Mr., 133
Bolus, Mr., x. 25
Bordes, J., 75, 77, 79, 87
Brand, Mr., 190
Breeknock Passage, 298

Bridges, Th., 302
Bridges, W., 40, 306
Brockow, C., 33
Brookes, Mr., 205
Brunel, A., 263
Bueno, Point, 89; Indians in, 84
Buenos Aires, Lake, visit to, 206; Mount, ascent of, 266
Buller, Cape, 322
Burbury, T., 268, 271, 278

Cabeza del Mar, nature of, 295
Cachalote, steamer, 313; damage to, 314
"Calafate," 56
Calbuco, volcano, 158
Cameron, A., 271
Camp, V., 329
Campsidium chilense, 99
"Canelo," 56
Cangrejo River, camping at, 260
Canis Azaræ, 279; *falklandicus*, 13
Caracoles, railway station, 130
Carbón River, valley of, 243
Casma, steamer, 134
Castillo farm, visit to, 268
Castro, appearance and history of, 117
Cattle, Mr., 265
Centinela, Mount, 221; valley of, 267
Cereus, 128
Chacao Channel, 106
Chaigneau, F., 33
Chalía River, sources of, 199
Challenger Expedition, 30
"Charqui" (dried meat), 111
Chasm Reach, echo in, 87
"Chaura," 56
"Chicha," 110
Chilcas River, camping at, 213
Chile, central valley of, 128; longitudinal railway, 133; national feast, 132
Chilean money, fluctuation of, 296
Chiliotrichum diffusum, 245
Chiloé, bullock-carts, 115; Catholic church, 107; culture of potatoes, 114; excursions on horseback, 111; flamingos, 113; forests, 115; history, 104; life in, 110; nature, 109; oysters, 112; roads, 108, 111, 115; valuable timber, 108; whaling, 112
Chilotes, character of, 109
Chloëphaga, 28, 44
Chubut River, crossing of, 175
Chusquea colihue, 115; *quila*, 115
"Ciruelillo," 196
Cisnes Valley, excursion into, 188
Ciudad de los Césares, 151
Clarke, Mr., 180
Cobb, F. E., ix.
Cochamó Company, 184
Cochayuyo, 110
Colihue, 115, 196
Compañia, Argentina de Pesca, 313; comercial y Ganadera Chile-Argentina, 156, 172; industrial del Rio Aysen, 193
Concepcion, visit to, 126
Condor, 50, 244
Condor, steamer, 298
Consuelo Harbour, visit to, 283
Contreras, Mount, 268
"Copihue," 84, 254
Corcolén, 195
Corcovado Gulf, volcanoes, 113, 122; Mount Corcovado, landing at, 123
Corintos River, crossing of, 181
Coronel, visit to, 126
Corral, visit to, 125
Cox, G., 153
Coyaike bajo, visit to, 193
Crown Princess Victoria, steamer, returning on, 329
Ctenomys magellanicus, 189
Cuarenta Dias Harbour, visit to, 79
Cumberland Bay, 317
Curtis, Mr., 129
Cutter Cove, visit to, 63
Cypress, 84

Dafonte, Mr., 310
Darwin, Ch., 30, 75, 105, 120, 144, 152, 299, 308
Darwin Glacier, 300; Harbour, 28
Dasypus minutus, 209
Dawson Island, visit to mission station, 35
Day, R., 183
Deseado, Lake, excursion to, 37; River, nature of, 212
Diaz Palacios, Lake, 62
Diomedea chlororhyncha, 16; *exulans*, 320
Donoso, Mount, ascent of, 281
Douglas Bay, visit to mission station, 302
Dreyfus, Mr., 112
Drimys Winteri, 43
Duc d'Aumale, sailing vessel, 15
Dun, Mr., 193
Durvillea, 9, 110
Dusén, P., 156

Eberhard, H., 288, 291
Edwards, Port, 311

Ekdahl, G., 127
Embothrium coccineum, 196
Empetrum rubrum, 51
English-Argentine Land Company, 176
English Harbour, landing in, 142
English Narrows, 85
Escallonia, 250
Escarpada Island, old Indian camp on, 66
Esguel Mountains, 180
Espersen, Mr., 205
Eudyptes chrysocome, 16; remarkable track of, 17
Evangelistas Islands, landing on, 80; nature of, 81
Excelsior Sound, Indian portage in, 101

Fagnano, Lake, appearance of, 42; arrival at, 43; boat trip on, 54; camp at, 47; depth of, 57; history of exploration, 34; return from, 58; road past, 306
Falkland Islands, albatross rookery, 16; alpine plants, 21; bishop, 4; boggy ground, 29; climate, 5, 21, 23; climate during Ice Age, 17; fossil forest, 18; foxes, 13; history, 22, 30; lack of trees, 6, 17; marine life, 8, 9; mountainous district, 21; nature, 6, 10; origin of stone-runs, 18; outlying islands, 13, 14; penguin rookery, 16; position, 2; riding in, 19, 24, 27, 30; sheepfarming, 20; shepherds, 20; tidal currents, 11, 12, 22; tussock grass, 7, 16; wild cattle, 12
Falkland Island Company, 4
Fallos Channel, 87
Felis concolor, 203
Felix Lighthouse, 90
Felton, A., x. 15
Fenix River, 207; vegetation at, 210; water-divide of, 212
Ferrier, W., 280, 285, 286
Fitzroy's excursion in Patagonia, 152
Fitzroy Channel, 65
Fitzroya Patagonica, 108
Flach, C., 185
Foley, Ch., x. 28
Fonck, C., 153
Fontaine River, survey of valley, 44
Fósiles River, floating soil at sources, 244; geological discoveries at, 245; mountain pass, 245
Fortuna, Port, 298
Fox Bay, visit to, 25
Frank, S., 246
Fria, Laguna, 160
Frias Valley, excursion into, 188
Frio, Lago, 274
Froward, Cape, 63, 311
Fuchsia magellanica, 65
Fuhr, K., 263
Furcifer chilensis, 189
Furlong, Ch., 307

Gable Island, fossils on, 306
Gajardo Channel, survey in, 69, 70
Gajardo, T., 62
Galapagos Islands, 144
Gallant, Port, Indians in, 77
Gardiner, H., 152
Gesa Inlet, discovery of, 289
Gio River, camping at, 221
Girling, W. C., ix. 2
Glacier Sound, 299
Glossopteris, 27, 312
Glossotherium, 290
Gomez, Port, visits to, 38, 61
Granfelt, G., 126
Grappler, Port, Indians in, 84, 85
de Grey, Lake and River, 286
Guanaco, 42, 52, 208; curiosity of, 220; large herds, 179, 191; tracks, 41, 45, 219
Guia Narrows, Indians in, 84
Gunnera peltata, 139
Guyon, Mr., 66
Gyldén, O., 1

Halle, J. G., viii.
Harberton Harbour, visit to, 306, 310
Harding, W., ix. 4, 27
"Harina tostada," 111
Hatcher Expedition, 155, 242
Hauthal, R., 155, 273
Herrera, Mr., 304
Hielo, River, 286; sources of, 287
Hill Cove, settlement in, 19
Hogberg, C., 240, 247
Holdich, Sir J., 155
Hooker, Sir J. D., 30
Hope Bay, camping in, 38, 59
Hoste Island, 303
Howard, Port, 24
Huafo Island, excursion to, 118; forests on, 119; gales, 118, 120; wild dogs, 119
Huapiguilan Islands, 118, 120
Huemul, first encounter, 189; hunting, 218, 226; tameness, 220, 283

Huemul, steamer, 33, 60, 62, 65; aground, 72; damaged, 73
Huilliches, 105
Hülphers, H., 286
Hush Indians, 307
Hymenophyllum, 66, 139

Icy Reach, drifting ice in, 85
Inca Lake, 130
Indians of Patagonian Channels, appearance, 92; food, 95; future, 103; garments, 94; habits, 93, 94; industry, 94, 97; language, 102; polygamy, 97; portages, 101; travels, 99, 100; weapons, 96
Indian canoe, construction of, 91, 99
Indian interpreter, 77
Inocentes Channel, 85

Jeinemeni Valley, difficult passage, 217
Jerome Channel, nature of, 63; nightly passage, 73
Johow, F., 139
Jones, Mr., 162
Joya, Lake, 235
Juan Fernandez Islands, arrival at, 135; first appearance, 135; history of discovery, 146; lobsters, 147; magui, 137; palm trees, 138; remarkable flora, 137; sandal tree, 141; situation, 134
Juania australis, 138
Juncal, railway station, 129

Kachaik, Mount, aspect of, 258
Karl, steamer, hunting whales on, 324
Kelpgeese, 44
Kentish Islands, 88
King, Cape, 82
Koslowsky Valley, 201
Krüger, P., 155

Laccolites in the Andes, 236, 282
Lacteo River, 237
Lafonia, district, nature of, 27
Lafonia, schooner, 10, 13, 25, 27
Landgren, T., 122
Lapataia, visit to, 300
Larsen, C. A., 313, 320, 321
Larus Scoresbyi, 28
Las Cuevas, railway station, 131
Laurel, 108, 195
Laurelia serrata, 195
Lebu, 126
Lehmann-Nietsche, R., 307
Lelej, English farm, 176, 178
Leña dura, 286
León, F., 152
Leona River, 261; bare landscape near, 262
Lessonia, 19, 22
Libocedrus chilensis, 162; *tetragona*, 84, 108, 121
Lista, R., 154
Lista Valley, aspect of, 241
Llanguihue Province, colonisation in, 157
Los Amigos, stay at, 65
Los Andes, visit to, 128, 132
Lota, famous park in, 126
Löwenborg, A., 33, 129
Löwenborg Lake, 53
Luche, 110
Luma, 108
Lundberg, Mr. (Koslowsky Valley), 205
Lundberg, Mr. (Lapataia), 300

Macrocystis, 10, 79
Macrorhinus leoninus, 319
Maldonado, R., 116
Mañiú, 84, 195
Mañiuales River, excursion to, 195
Margueirat, F., 297
Maria, Mount, ascent of, 24
Marsippospermum grandiflorum, 94
Martial Mountains, aspect of, 305
Masafuera Island, ascent of, 144; flora, 144, 146; future, 148; penal settlement, 147; topography, 144, 146; wild goats, 144
Masatierra Island, topography of, 136, 138
Mascardi, Father, mission journeys of, 152
Mascarello River, 42; camping at, 46
Mata Blanca, 245
Maté, 49
Mathews, Mr., x. 24
Mayer, Mr., 39
Mayer River, 242
Mayo River, boggy ground along, 199
Maytén, farm, 175
Maytenus magellanica, 286
Megaptera, 326
Merino, J. E., 117
Meseta Chalía, difficult crossing of, 199
Meseta Guenguel, pass across, 206
Meseta del Viento, crossing, 259
Messier Channel, 85

Meteoro, steamer, 76
Miguens, A., 181
Miller, Mr., x.
Mogole, Lake, 236
Montt, J., 75, 127
Moreno, F. P., 153, 212
Morro Chico, stopping at, 292
Moyano, Mr., 153
Mulinum spinosum, 167
Müller, F., 49, 54
Murray Narrows, 302
Musters, G., 153
Mylodon Cave, visit to, 289, 291
Myrcengenia apiculata, 195
Myrtus luma, 108

Nahuelhuapi, Lake, 161
Navarin Island, 302
Ñire, 41
Ñirehuao Valley, excursions in, 191
Ñires River, camping at, 241
Nordenskiöld, E., 290
Nordenskjöld, O., 40, 289
Ñorquinco, last telegraph office, 172
Nothofagus antarctica, 41, 65, 89; *betuloides*, 43; *pumilio*, 51, 64

Obstruction Sound, Indian road to, 101
Ogmorhinus leptonyx, 319
Olivia, Mount, 305
Ona Indians, 306
Orange Bay, visit to, 308
Oravia, steamer, 1, 2
Oronsa, steamer, 31
Osborne, Mr., 13
Osorno volcano, 157
Otway Station, visit to, 293
Otway Water, nature of, 64

Pacheco Island, 82
Packe, V., x.
Packsaddle Bay, visit to, 304
Pagels, A., 34, 62, 150, 162
Palinurus frontalis, 147
Pampa Chica, stay at, 184
Pascua River, 249
Patagonia, alpine flora, 220; boundary dispute, 154; camping in, 169, 170; cedars, 162; dryness of, 187; equipment for voyage in, 163; forests in, 182, 195, 234; foxes, tameness of, 279; fur trade, 208; history of discoveries, 151, 154; horses, 163; hospitality, 184; journey planned, 150; lamb-marking, 192; life of peons, 177; ostriches, 179; rapid changes of temperature, 211; salt-lagoons, 18; solifluction, 200; swamps, 198; table-mountains, 188; thefts of horses, 174; water-birds, 187, 213; vegetation of pampas, 107, 182, 203
Patagonian Channels, animal life in, 83; forests, 84; glaciers, 299; latitudinal changes of vegetation, 84; meeting Indians in, 82, 84, 85; nature, 83; scenery, 78; traffic, 84; weather, 79, 83; western passage, 85
Patagonian skerries, nature of, 79
Payne, Mount, ascent of, 282; aspect of, 280; geology, 282, 284
Pearce, J., 8
Peel Inlet, survey in, 88; possibility of crossing inland ice to, 287
Pembroke lighthouse, 7, 8
Penas Gulf, visit to, 85
Peninsula, Lake, 236
Perez-Rosales Pass, crossing of, 160
Pernettya mucronata, 56
Peulla, arrival in, 159; forests round, 161
Pico River, visit to German settlement, 188
Pillar cactus, 128
Pitt Channel, bad anchorage in, 87
Philesia buxifolia, 84, 254
Philippi, F., 141
Philippi, R. A., 153
Philomel, Port, 11
Poa flabellata, 16
Podocarpus nubigena, 84
Poncho, 107, 129, 164
Popper, J., 309
Port Egmont, old settlement in, 22
Port Louis, 30
Port Stanley, life in, 3
Porvenir, steamer, 296
Posadas, Lake, visit to, 222, 224
Pot Harbour, changes in, 317
Potrancas, rivulet, 242
Preston, Mr., 176
Primero de Mayo, 297
Princess Ingeborg, leave Sweden on, 1
Principio, Mount, camping at, 222
Pudeto River, voyage up, 113
Pudú, 115
Puerto Blest, 160; snowstorm in, 161
Puerto Montt, departure from, 156
Puerto Varas, 157
Pueyrredon, Lake, visit to, 222
Puma, 203
Punta Arenas, 32, 199, 312

Quebrada de las Casas, 144
Queen Adelaide group, 82

Quellon, visit to, 122
Quemado, Mount, camping at, 177
Quensel, P. D., viii.
Querquedula Eatoni, 320
Quila, 115
Quillango, 208

Ramirez, Chilean settlement, 83
Reeves, Mr., 259, 262
Reid, A., ix. 2
Resi Inlet, discovery of, 289
Rhea, 179
Rhodostachys bicolor, 115
Rio Grande, excursion to, 75
Robinson Crusoe, 135
Robinson's Grotto, 143
Roble, 56, 64
Robles River, crossing of, 239
Roca, Lake, boat excursion on, 301
Rogberg, C., 1, 312
Rojas, B., 33, 62, 296
Rojas River, discovery of, 53
Romanche Bay, visit to, 299
Rosario, Lake, dangerous swamps near, 182
Roth, C., 159
Roth, S., 155
Roy Cove, settlement in, 15

Samuel Cove, visit to, 118
San Carlos, excursion to settlements, 29
San Clementi, Mount, 206
San Lorenzo, Mount, 236
San Martin, Lake, boat excursion on, 249; glaciers, 253, 255; icebergs, 249, 255; terrible squalls, 250, 252
San Pedro Island, 117; primeval forest, 120
San Valentín, Mount, 206
Santa Cruz River, crossing of, 264
Santalum fernandezianum, description of last specimen, 142
Santiago, Swedish colony in, 127
H.M.S. *Sappho*, arrival of, 31
Sarmiento Channel, 84
Sarmiento, Lake, remarkable nature of, 284
Sarmiento, Mount, 298
Saunders Island, visit to, 22
Saunders, Mr., 293
Saxegothea conspicua, 195
Schönmeyr, A., 127
Schönmeyr glacier, 255
Sea-elephant, 319, 323
Sea-leopard, 319
Selkirk, A., 139; commemoration tablet to, 140
Senguerr River, crossing of, 191
Sheep-dip, 247, 268
Shehuen, valley of, 259
Sixteenth October Valley, 180; rain-forests in, 182; Welsh Colony, 181
Skottsberg, C., viii.
Skottsberg, Lake, visit to, 283
Skunk, 260
Skyring Water, coal mines, 73; colonists, 66; fossils, 73; gales, 65; glaciers, 67, 68; history of discovery, 62; hydrography, 72; nature of, 67; travels of Indians, 66, 68
Slogget Bay, gold-digging in, 309; fossils in, 308; marine flora, 310
Smyth Channel, 84
Sociedad Esplotadora de Tierra del Fuego, 268, 271
Solanum tuberosum, 114
South Georgia, arrival in, 317; climate, 318; hunting whales, 325; hurricanes, 323; nature of, 318; vegetation, 319; voyage to, 314; whaling industry, 313, 321
South Patagonia, gold-digging in, 64; history of colonies, 269, 289
Steffen, H., 155
Stewart, Mr., 193
Stipa, 261
Svea, Mount, visit to, 51

Tachyeres cinereus, 47
Talkahuano, naval port, 126
Tar, Lake, swamps round, 258
Tecka River, 184
Tehuelches, 199, 237
Témpanos Narrows, strong tidal currents, 69
Témpanos, Port, discovery of, 89
Tepú, *Tepualia stipularis*, 96, 121
Thesleff, A., 155
Thessalia, steamer, 312
Tierra del Fuego, alpine flora, 50; arrival at, 38; bird life, 44, 47, 55; boundary dispute, 311; camp life, 48; equinoctial gales, 57; forests, 55; gold prospecting, 309; mission station, 35; mountain scenery, 45, 49; peat bogs, 42, 45; tertiary fossils, 75; weather, 43, 52, 55
Todos los Santos, Lake, 158
Toro, steamer, 117, 124
Transandine railway, 128; great tunnel, 130; wild life among labourers, 130
Trichomanes, 139

Tronador, Mount, excursion to, 160; glaciers with vegetation on, 160
Tropilla, 163
Troya Channel, 86
Tuco-tuco, 189
Tuco-tuco, rivulet, 241
Turbis River, 292

Ulloa, F., 104
Ultima Esperanza, visit to, 288; boat excursion from, 289; great caverns near, 291, 292
Ulva, 110
Underwood's farm, stay in, 180
Undine, steamer, 321
Upsala glacier, survey near, 277
Usborne, Mount, ascent of, 29
Ushuaia, visit to, 304, 311
Uspallata Pass, crossing of, 130; statue of Christ in, 131

Vacas Mountains, 241
Valdivia, visit to, 126
Valdivia, P., 104
Valdivia, steamer, 116
Valdivieso Mountains, 40; discovery of pass across, 53
Valenzuela, F., 296
Valparaiso, visit to, 127
Ventisqueros Inlet, survey in, 68
Verbena, 210
Verde, Mount, 40
Veronica elliptica, 13
Vestfold, steamer, 124, 127
Viedma, Lake, visit to, 261
Viel Channel, first encounter with channel Indians, 82

Warrah River, excursion in valley of, 23, 24
Westpoint Island, nature of, 15
Whales, blue, 326; fin, 326; humpback, 326; right, 324; whale-oil, 327
Whaleboat Sound, 298
Whaling steamers, 324
Wickham Heights, 29
Winter's Bark, 43, 56, 66
Wollaston Islands, vegetation of, 304
Woodsworth Bay, beautiful waterfall in, 90
Worsley Sound, 289

Yahgan Indians, disappearance of, 101; encounter with, 302, 303; mussel-banks of, 301
Yegua Madrina, 163
Yelcho River, excursion in valley of, 123
Yerba, 49

Zapallar, visit to, 132
Zapato, Mount, 287
Zeballos River, camping at, 219; mountain scenery east of, 220

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